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CONTENTS

Diseases Caused by Bacteria and Fungi, **107-110.**

Occurrence of haemolytic cocco-bacilli in nose of normal sheep and cattle, **107**; Features of early mastitis in heifers during first lactation, **107**; Eradication of mastitis from dairy herds, **107**; Variation of group C hemolytic streptococci, **107**; Influence of vitamin K on fibrinolytic power of haemolytic streptococci, **107**; Haemodigestive property of *Bacillus anthracis*, **107**; Status of *B. subtilis*, including a note on separation of precipitinogens from bacterial spores, **108**; Relationship of bovine to human TB. considered in light of experience, **108**; Patch (skin) test in diagnosis of bovine TB., **108**; Case of TB. in an elk, **108**; Filtration of *Mycobacterium tuberculosis* and *Mycobact. stercusis* through gradocol membranes, **108**; Artefacts encountered in stained preparations of tubercle bacilli. I. Non-acid-fast forms arising from mechanical treatment, **108**; Preisz-Nocard disease. Study of small outbreak among horses, **109**; Case of acute glanders in man, **109**; Swine erysipelas, **109**; Listerellosis in Wisconsin, **109**; Listeria infection in sheep in France, **109**; Codehydrogenase I and other pyridinium compounds as V-factor for *Haemophilus influenzae* and *H. parainfluenzae*, **109**; *Salmonella cholerae-suis* bacteriophage in swine faeces, **109**; Occurrence of unusual salmonella types in man, including a new type, *S. georgia*, **109**; Avian salmonellosis. Types of salmonella isolated and their relation to public health, **109**; Salmonella infections in turkeys, **109**; Pullorum control and practitioner's part in programme, **110**; Isolation of *Brucella bronchiseptica* from piglets, **110**; Parabotulism in horses in the Pas de Calais, **110**; Epidemic fatal paralysis in horses in France, **110**; Relation between *Fusobacterium* and accompanying spirochaetes, **110**; Observations on histoplasmosis. Induced infection in the mouse, **110**; Nutrition of the enterococci, **110**; Selective reversible inhibition of microbial growth with pyrithiamine, **110**.

Diseases Caused by Protozoan Parasites, **111.**

Biochemical reactions, cultural characteristics and growth requirements of *Trypanosoma cruzi*; Coccidian oocysts; *Haemoproteus handai* in Indian parakeet; Method for collecting sporozoites of *Plasmodium gallinaceum* by feeding infected *Aëdes aegypti* through animal membranes; Preparation and properties of antigens from P. knowlesi.

Diseases Caused by Viruses and Rickettsia, **112-114.**

Shape, size, distribution, and structure of elementary bodies of certain viruses, **112**; Further research with B type mouse-neurotropic strain of F. & M. disease virus, **112**; A modified rabies virus, **112**; Incidence of rabies in western Rumania, **112**; I. Antirabic vaccination from 1902 to 1935. II. Virulence and resistance of fixed rabies virus to various attenuating agents, **112**; Rabies vaccination from 1924 to 1937 at Ancona, **112**; Antirabies vaccination of animals in Tunisia, **112**; Bird pox in the sooty grouse, with recovery of the virus, **112**; Natural infection of pigs with virus of human influenza, **113**; Chemical analysis of influenza viruses A (PR8 strain) and B (Lee strain) and swine influenza virus, **113**; Influenzal infections in the chick embryo, **113**; Semliki forest virus. I. Isolation and pathogenic properties. II. Immunological studies with specific antiviral sera and sera from humans and wild animals, **113**; Equine infectious anaemia in Slovakia, **113**; Action of chemical and physical agents on virus of E.I.A., **113**; Diagnosis of swine fever before appearance of haemorrhagic syndrome, **114**; Variability of Theiler's virus of mouse encephalomyelitis, **114**; Pathology of experimental avian pneumo-encephalitis, **114**; Neutralization tests with avian pneumoencephalitis virus, **114**; Recovery of virus of lymphocytic choriomeningitis from erythrocytes of infected animals, **114**; Observations on *Rickettsia conjunctivae* and other similar micro-organisms from the conjunctiva of sheep, **114**; Strain of typhus rickettsiae isolated from brain of a wild rat in California, **114**; Survival of *R. prowazeki* in different diluents, **114**; Complement fixation in rickettsial diseases—technique of the test, **114**.

Immunity, **115.**

Chemotaxis of leucocytes and staphylococcus exotoxin; Immunization to typhoid and paratyphoid fevers; Protective or curative elements in type B *Haemophilus influenzae* rabbit serum; Action of oily filtered extracts of acid-fast bacilli.

Parasites in Relation to Disease [Arthropods], **115.**

Ox warbles; *Dermestes vulpinus* infestation of hides and skins.

Parasites in Relation to Disease [Helminths], **115.**

National conference on control of hydatidosis, Buenos Aires, May, 1942; Unusual localization of *Ascaris lumbricoides* in two pigs; Genus *Metastrongylus* Molin, 1861.

Spontaneous and Transmissible Neoplasms and Leucaemias [Including Fowl Paralysis], **116.**

Lymphosarcoma in a horse; Malignant growths in guttural pouches of horses; Cancer in butchers; Influence of milk factor on incidence of breast cancer induced by oestrone; Fowl paralysis and some current conditions in poultry problems.

Diseases, General, **116-119.**

War and postwar disease control problems, **116**; Qualitative urine analysis in the dog and its clinical significance, **116**; Mechanism of narrowing of the larynx in one-sided recurrent nerve paralysis in horses (roaring), **116**; Equine myoglobinuria paralytica, **117**; Epizootic of disease in horses in France characterized by encephalomyelitis, **117**; Blindness with papilloedema in calves, **117**; Multiple hyaline heart and muscular degeneration in enzootic apoplexy in pigs, **117**; Thyroid lesions in cardiac syncope in pigs, **117**; Anaemia associated with infection, **117**; Serum proteins in diseases of heart and kidneys, **117**; Calcification of media of human aorta and relation to intimal arteriosclerosis, ageing and disease, **117**; Periarteritis nodosa in experimental hypertensive rats and dogs, **118**; Haemosiderosis of Kupffer cells of the liver in slaughter horses, **118**; Chronic purpura haemorrhagica of hepatic origin, **118**; Diseases of central nervous system of swine, **118**; Tooth abnormalities in pigs, **118**; Role of micro-organisms in reproductive disorders of the chicken, **119**; Uraemic complex, **119**; Origins of cell concept in pathology, **119**; Study of infants dying from congenital defects following maternal rubella in pregnancy, **119**.

NUTRITIONAL AND METABOLIC DISORDERS, 119-122.

Biological significance of nutrients, **119**; Frigidity in the female rabbit, **120**; Earth-eating by lamb in British Columbia, **120**; Use of blood phosphatase test for clinical diagnosis of mineral deficiencies in pigs, **120**; Tracer study with Mn^{56} on chicks with experimentally produced perosis, **120**; Effect of colostrum on vitamin A and carotene content of blood plasma of new-born calves, **120**; Experiment in feeding wheat germ oil as supplement to bulls used for artificial insemination, **120**; Mortality of mammalian young with possible nutritional causes, **120**; Unidentified factor(s) in yeast and liver essential to cure of achromotrichia in dogs, **121**; Ratio of ascorbic, nicotinic, and pantothenic acids, riboflavin and thiamin in late summer milk, **121**; Metabolism of ascorbic acid in the horse, **121**; Study of neuromuscular regeneration under different levels of vitamin C intakes, **121**; Acetonaemia in milch cows, **122**; Cause and prevention of grass tetany in cattle, **122**.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY, 122-124.

Observations on uniovular and binovular bovine twins regarding similarity in morphology and physiology, **122**; Effects of anterior pituitary preparation administered to lactating dairy cows, **122**; The "holding up" and "letting down" of milk, **122**; Erythropoietic substance in serum of anaemic animals, **122**; Variations in leucocyte count of the pig during the first twelve weeks of life, **123**; Blood picture of a cow during a normal pregnancy and parturition, **123**; Electron microscope study of sperm, **123**; Failure of ascorbic acid to augment equine gonadotropin in the rat, **123**; Artificial insemination of Australian merino sheep, **123**; Role of vitamin C in wound healing, **123**; Phosphatase and repair of fractures, **123**; Role of creatine in cell growth *in vitro* and its use in wound healing, **124**; Anatomical closure of foramen ovale in equine and bovine heart: comparative study on foetal and adult states, **124**; Structure of lungs in fowls and ducks, **124**; Comparative anatomy of Gasserian ganglion, **124**; Development of hypophysis of the ox, **124**; Comparative histology of pituitary body, **124**.

POISONS AND POISONING, 124-125.

Physico-chemical mechanism of oligodynamic action of mercury, **124**; Hydrogen sulphide poisoning in cattle, **124**; Zinc poisoning in cattle, **124**; Toxicity of wild winter peas (*Lathyrus hirsutus*) for cattle, **125**; Fern allergy, **125**; Toxicity of extracts of derris root for mice, **125**; Relative toxicity of six salts of penicillin, **125**; Effects of sulphonamide drugs on the blood, **125**; Measurement of toxicity of antiseptics by method of unstained cell counts, **125**; Mustard gas poisoning in horses, **125**.

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION, 125-129.

Haematologic actions of acetanilid and acetophenetidin in the dog, **125**; Investigation into production of bacteriostatic substances by fungi. Examination of a fourth 100 species, all penicillia, **126**; Gramicidin S. Origin and mode of action, chemistry, clinical use, **126**; Streptothricin as chemotherapeutic agent, **126**; Effect of rate of growth of bacteria on action of penicillin, **126**; Relationship of penicillin to sulphonamide action, **126**; Activity of penicillin combined with other antistreptococcal agents towards β-haemolytic streptococci *in vivo*, **126**; Studies on absorption of sulphonamides from gastro-intestinal tract of albino rats, **126**; Relation between chemical structure and bacteriostatic activity of sulphanilamide type compounds, **126**; Influence of access of free oxygen on action of antiseptics with special reference to sulphonamides, **127**; Sulphonamide allergy. Persistence of desensitization, **127**; Relation of antisulphonamide action of serum to resistance to sulphonamide therapy, **127**; Effect of certain salts on activity of sulphacetamide, **127**; Bacteriostatic action of penicillin on haemolytic streptococci *in vitro*, **127**; Sulphathiazole-acetaldehyde sodium bisulphate in experimental group C streptococcal infections, **127**; Effect of chemotherapeutic sulpha drugs upon growth of α-haemolytic streptococcus, **127**; Bactericidal action *in vitro* of sulphanilamide and sulphapyridine on *Mycobacterium leprae muris*, **127**; Action of sulphonamides and of *p*-aminobenzoic acid on *Pasteurella tularensis*, **127**; *In vitro* action of sulphonamides on clostridia. Sulphonamide inhibitors, **127**; Action of drugs on exo-erythrocytic forms of malaria parasites, **128**; Sulphasuxidine and sulphathalidine for infectious calf scours, **128**; Rodent ulcer treated by application of sodium bicarbonate, **128**; Cyanide poisoning and its treatment, **128**; Selenium-arsenic antagonism in poultry, **128**; Treatment of anoestrus of sows with diethylstilboestrol, **128**; Treatment of phosphorus burns, **128**; Effect of sulphanilamide powder on healing of sterile and infected wounds, **128**; Studies in dynamics of disinfection. I. New data on reaction between phenol and *Bacterium coli*, with analysis of distribution of resistance amongst cells of bacterial populations studied, **129**; Germicidal mists and vapours in air disinfection, **129**; Engineering problems in use of glycol vapours for air sterilization, **129**; Effectiveness of ultraviolet irradiation of upper air for control of bacterial air contamination, **129**.

HYGIENE AND PUBLIC HEALTH, 129-131.

Food control in Germany, **129**; Veterinary food inspection in connexion with large-scale catering, **129**; Bacteriological aspects of dehydrated foods, **130**; Substitution of specimens of faeces for bacteriological examination, **130**; Proposed veterinary control of whale meat, **130**; Salmonellosis as a public health problem in wartime, **130**; The Maidenhead food poisoning, **130**; Meat poisoning due to *Salmonella abony*, **130**; Food poisoning due to *S. typhi-murium* (*anaerogenes*), **131**.

TECHNIQUE AND APPARATUS, 131.

Cultivation and preservation of *Diplococcus pneumoniae* and *Mycobacterium tuberculosis* in market eggs; Gas gangrene antitoxin production; Note regarding the speeds of Babcock centrifuges; Use of stomach tube in horses; A new method of preventing blood coagulation; Method of following growth of bones in experimental animals.

MISCELLANEOUS, 131-135.

Additional veterinary colleges, U.S.A., **131**; History of veterinary education in Galicia, Poland, **131**; Dominion Veterinary Medical Council, Canada, **132**; Future development of field veterinary services in India, **132**; State veterinary service

for inspection of foods of animal origin, France, **132**; Veterinary service of China, **132**; Establishment of registry of veterinary pathology at Army Institute of Pathology, Army Medical Museum, Washington, D.C., **132**; Training officers, Veterinary Corps, U.S. Army, in meat and dairy inspection, **132**; Veterinary Corps in the Mojave desert, **133**; Co-operation of the five animal science societies in the war effort, U.S.A., **133**; National Live Stock Loss Prevention Board, U.S.A., **133**; Use of propaganda in improvement of livestock industry, Brazil, **133**; Work of Animal Health Division, Ministry of Agriculture, Brazil, **133**; Role of veterinarian in rural life, **133**; British Society of Animal Production. Report of inaugural meeting, **133**; Report of meeting of Emergency Executive Committee of National Poultry Improvement Plan, U.S.A., **133**; Annual meeting Indiana Veterinary Medical Association, **133**; Great Britain. Draft dated February 11, 1944, of the Therapeutic Substances Amendment Regulations proposed to be made, **134**; Agriculture (Miscellaneous Provisions) Bill, **134**; North Dakota. Laws and regulations pertaining to livestock sanitary control work, **134**; Uruguay: decree regulating production of animal brands, **134**; Advantages and disadvantages of livestock shows, **134**; Influence of milking machines on udders of cows, **135**; Second supplement to "A treatise on the one-humped camel", **135**; Make them "fighting" sheep, **135**; The "red" goat of the north east Sahara, **135**; Army's four-footed soldiers, **135**; Breeding and maintenance of white mice, **135**; Eradicating meercats, **135**; Opportunity for films, **135**; Inventions of veterinarians at work, **135**.

REPORTS, **136-137**.

Gold Coast. Department of Agriculture, Ashanti. Annual Report—1943-44, **136**; Gold Coast. Annual Report: 1943-44, Agriculture—Central Province, **136**; Report of New York State Veterinary College at Cornell, 1938-39 and 1940-41, **136**; Rockefeller Foundation. International Health Division, annual report 1943, **137**; Rockefeller Foundation. Review for 1943, **137**; Work of Pasteur Institute, Tunis, 1941, **137**.

BOOK REVIEWS, **137-138**.

Introductory animal husbandry [Anderson], **137**; Livestock improvement in relation to heredity and environment [Nichols], **137**; The meat we eat [Ziegler], **138**; The microscope and its use [Muñoz & Charipper], **138**.

INDEX TO AUTHORS

ANON., 128, 131, 134.

de Aboim-Inglez, A. L., & da Silva Leitão, J. L., 115.
Alexander, H. E., Heidelberger, M., & Leidy, G., 115.
Alikaev, V. A., 135.
Almquist, J. O., & Andrews, F. N., 123.
Anderson, A. L., 137.
Anderson, C. R., 114.
Andrews, F. N. See Almquist, J. O., jt. author, 123.
Angiolani, S., 112.
Argentina. Conf. Contr. Hydatidosis, May, 1942, 115.
Åslander, A., & Törnqvist, S., 131.
Ats, K., 118.

Baker, A. H., & Twort, C. C., 129.
Baker, K. G. See Sugg, R. S., et al., jt. authors, 125.
Ballantyne, E. E., 131.
Balozet, L., 112.
Barker, C. A. V., 128.
Barros, J., 115.
Bartlett, M. K. See Jones, C. M., et al., jt. authors, 128.
Baylor, M. R. B., Nalbandov, A., & Clark, G. L., 123.
Beck, M. D., Bodily, H. L., & O'Donnell, R., 114.
Bekker, J. H., 107.
Belin, M., & Lagriffoul, A., 109.
Bellocq, P., & Louf, R., 118, *ter*.
Belozersky, A. N., & Passhina, T. S., 126.
Bengtson, I. A., 114.
Bennett, R. H. See Loughlin, E. H., et al., jt. authors, 126.
Berry, M. H. See Moore, L. A., jt. author, 120.
Berthelon, & Binet, G., 119.
Bierman, W., Shwartzman, G., & Rosenberg, S. I., 127.
Bigg, E. See Jennings, B. H., jt. author, 129.
Binet, G. See Berthelon, jt. author, 119.
Bishop, A., & Gilchrist, B. M., 111.
Blum, G., 123.
Blumenthal, H. T., Lansing, A. I., & Wheeler, P. A., 117.
Bodily, H. L. See Beck, M. D., et al., jt. authors, 114.
Bøe, J., & Jonsen, J., 110.
Boroff, D. A., 127.
Bose, R. See Dharmendra, jt. author, 127.
Bosworth, T. J., & Lovell, R., 107.
Botez, M., 112.
Boughton, I. B., Cunningham, O. C., Hultz, F. S., Leinbach, F. H., & Miller, R. F., 135.
Brazhnikova, M. G. See Gause, G. F., jt. author, 126.
Brazil. Anim. Hlth Div., Min. Agric., 133.
Brown, A. L., 110.
Bruce, E. A., 120.
Burnet, E., & Cabasso, V., 114, 115.

Cabasso, V. See Burnet, E., jt. author, 114, 115.
Caldevilla, R., 112.
Cameron, D., 128.
Caminita, B. H. See Schneiter, R., et al., jt. authors, 129.
Campbell, M. M. See Malcolm, J. F., et al., jt. authors, 107.
Canada. Dom. Vet. Med. Coun., 132.
Caspe, S., 124.
Caudron, M., 110.
Charipper, H. A. See Muñoz, F. J., jt. author, 138.
Chatterji, B. C. See Panja, G., jt. author, 109.
China. Vet. Serv., 132.
Clark, B. B. See Van Loon, E. J., jt. author, 125.
Clark, G. L. See Baylor, M. R. B., et al., jt. authors, 123.
Coghlin, C. L., 124.
Cooper, K. E., 130.
Cowan, I. M. See Syverton, J. T., jt. author, 112.
Cretzmeyer, C. H. See Hines, H. M., et al., jt. authors, 121.
Csiszár, V., 114.
Cunningham, O. C. See Boughton, I. B., et al., jt. authors, 135.

Dale, C. N., Meriweather, H., & Schoening, H. W., 109.
Daniels, T. C. See Kumler, W. D., jt. author, 126.
Dann, F. P. See Frost, D. V., jt. author, 121.
Davis, R. P. See Welch, H., et al., jt. authors, 125.
Dawson, M. H. See Hobby, G. L., jt. author, 126, *bis*, 127.
Delaunay, A., 115.
Derflinger, E. R., 125.
Dharmendra, & Bose, R., 127.
Dmochowski, L., & Gye, W. E., 116.
Dobi, E., 124.
Dougherty, E. C., 115.
Dreguss, M., 113.
Drummey, G. D. See Jones, C. M., et al., jt. authors, 128.
DuBuy, H. G. See Schneiter, R., et al., jt. authors, 129.
Dulaney, A. D., & Morrison, D. B., 111.
Duncan, C. W. See Sykes, J. F., et al., jt. authors, 122.

Edwards, J. T., 133.
Elliot, E. M. L. See Haines, R. B., jt. author, 130.
Elvehjem, C. A., 119.
Epstein, J. A. See Foley, E. J., et al., jt. authors, 127.
Errecalde, J. E., 108.
Errington, B. J., Hodgkiss, W. S., & Jayne, E. P., 121.
Esselen, K. See Holmes, A. D., et al., jt. authors, 121.

Falkiner, G. B. S., Kelley, R. B., Granger, W., & Gunn, R. M. C., 123.
Feemster, R. F. See Rubenstein, A. D., et al., jt. authors, 130.
Fenstermacher, R. See Pomeroy, B. S., jt. author, 109.
Fiadeiro, J., 133.
Fink, J. W., 107.
Flanagan, M. E. See Loughlin, E. H., et al., jt. authors, 126.
Foley, E. J., Epstein, J. A., & Lee, S. W., 127.
Forsell, G., 116.
Fosdick, R. B., 137.

Fraser, H. F. See Schneiter, R., et al., jt. authors, 129.
Frost, D. V., & Dann, F. P., 121.

Gause, G. F., & Brazhnikova, M. G., 126.
Gayot, G. See Sergent, Ed., jt. author, 135.
Gelarie, A. J., 131.
Genest, P., 110.
Gilchrist, B. M. See Bishop, A., jt. author, 111.
Gingrich, W., & Schlenk, F., 109.
Glässer, K., 117.
Göbel, F., 131.
Gold Coast. Dep. Agric. Ashanti. Rep. 1943-44, 136.
—. Rep. 1943-44, Agric., Cent. Prov., 136.
Goodhue, L. D. See Haag, H. B., et al., jt. authors, 125.
Goodrich, H. P., 111.
Gould, I. A. See Sykes, J. F., et al., jt. authors, 122.
Granger, W. See Falkiner, G. B. S., et al., jt. authors, 123.
Gt. Britain. Agric. (Misc. Prov.) Bill, 1944, 134.
—. Draft therap. Subs. Amend. Regs, 1944, 134.
—. Inaug. Meet. Brit. Soc. Anim. Prod., Jan. 1944, 133.
Greenberg, D. M. See Mohamed, M. S., jt. author, 120.
Grey, C. G., 109.
Grove, D. C. See Welch, H., et al., jt. authors, 125.
Grundy, C. B. See Thorp, W. T. S., et al., jt. authors, 128.
Gunn, R. M. C. See Falkiner, G. B. S., et al., jt. authors, 123.
Gye, W. E. See Dmochowski, L., jt. author, 116.

Haag, H. B., Taliaferro, I., & Goodhue, L. D., 125.
Haak, D., 122.
Habersang, O., 131.
Haddow, A. J. See Smithburn, K. C., jt. author, 113.
—. See also Smithburn, K. C., et al., jt. authors, 113.
Hagan, W. A., 136, *bis*.
Haines, R. B., & Elliot, E. M. L., 130.
Harris, G. C. M. See Wilkins, W. H., jt. author, 126.
Hart, G. H., 133.
Heidelberger, M. See Alexander, H. E., et al., jt. authors, 115.
Hermansson, K. A., 108.
Herrington, B. L., 131.
Hines, H. M., Lazere, B., Thomson, J. D., & Cretzmeyer, C. H., 121.
Hinshaw, W. R., McNeil, E., & Taylor, T. J., 109.
Hobby, G. L., & Dawson, M. H., 126, *bis*, 127.
Hodgkiss, W. S. See Errington, B. J., et al., jt. authors, 121.
Hoffman, E., 124.
Hofmann, W., 112.
Hollaender, A. See Schneiter, R., et al., jt. authors, 129.
Holmes, A. D., Jones, C. P., Wertz, A. W., Esselen, K., & McKey, B. V., 121.
House, E. L., 124.
Hoyt, H. H. See Spencer, G. R., et al., jt. authors, 109.
Hüsgen, 129.
Huffman, C. F. See Sykes, J. F., et al., jt. authors, 122.
Hultz, F. S. See Boughton, I. B., et al., jt. authors, 135.
Hunt, A. H., 123.
Hunter, A. C. See Welch, H., et al., jt. authors, 125.

Jacobs, S. E. See Jordan, R. C., jt. author, 128.
Jayne, E. P. See Errington, B. J., et al., jt. authors, 121.
Jennings, B. H., & Bigg, E., 129.
Jennings, J. R., 130.
Jones, C. M., Bartlett, M. K., Ryan, A. E., & Drummey, G. D., 128.
Jones, C. P. See Holmes, A. D., et al., jt. authors, 121.
Jonsen, J. See Bøe, J., jt. author, 110.
Jonsson, G., & Sjöberg, K., 122.
Jordan, R. C., & Jacobs, S. E., 128.
Jungeblut, C. W., 114.
Jungherr, E., & Minard, E. L., 114.
—. See also Minard, E. L., jt. author, 114.

Kagan, B. M., 117.
Kausche, G. A. See Ruska, H., jt. author, 112.
Kelley, R. B. See Falkiner, G. B. S., et al., jt. authors, 123.
King, C. W. See Malcolm, J. F., et al., jt. authors, 107.
Kment, A. See Kuscher, A., et al., jt. authors, 116.
Kolb, R. W. See Schneiter, R., et al., jt. authors, 129.
Koschnick, 125.
Kracke, R. R., 125.
Kreguer, A. See Levaditi, J. C., et al., jt. authors, 110.
Krumdieck, N., 122.
Kumler, W. D., & Daniels, T. C., 126.
Kuscher, A., Pommer, A., & Kment, A., 116.

Lagriffoul, A. See Belin, M., jt. author, 109.
Lamanna, C., 108.
Lamy, R. See Levaditi, J. C., et al., jt. authors, 110.
Lansing, A. I. See Blumenthal, H. T., et al., jt. authors, 117.
Lazere, B. See Hines, H. M., et al., jt. authors, 121.
Lecomte, A., 122.
Lee, S. W. See Foley, E. J., et al., jt. authors, 127.
Leese, A. S., 135.
Leidy, G. See Alexander, H. E., et al., jt. authors, 115.
Leinbach, F. H. See Boughton, I. B., et al., jt. authors, 135.
Levaditi, J. C., Lamy, R., & Kreguer, A., 110.
Liebow, A. A. See Tager, M., jt. author, 110.
Lima, J. P., 133.
Longfellow, D., & Luippold, G. F., 115.
Van Loon, E. J., & Clark, B. B., 125.
Loughlin, E. H., Bennett, R. H., Flanagan, M. E., & Spitz, S. H., 126.
Lovell, R. See Bosworth, T. J., jt. author, 107.
Luippold, G. F. See Longfellow, D., jt. author, 115.
Lutsch, E., 118.

McGuire, J. See Smith, C. C., et al., jt. authors, 118.
McKey, B. V. See Holmes, A. D., et al., jt. authors, 121.
McLeod, J. W., Mayr-Harting, A., & Walker, N., 127.
McNeil, E. See Hinshaw, W. R., et al., jt. authors, 109.
Mahaffy, A. F. See Smithburn, K. C., et al., jt. authors, 113.
Malcolm, J. F., King, C. W., & Campbell, M. M., 107.
Mansfield, W. S., 133.
Maqsood, M., 111.
Marinoni, F. See Sforza, P., jt. author, 107.
Marten, E. A. See Moore, E. N., jt. author, 119.
Mathis, M., 135.
Matthias, D., 117.
Mattice, M. R. See Pinck, B. D., et al., jt. authors, 127.
Mayr-Harting, A. See McLeod, J. W., et al., jt. authors, 127.
Menges, R. W., 133.
Meriweather, H. See Dale, C. N., et al., jt. authors, 109.
Mertens, V. E., 116.
van der Meulen, J. B., 122.
Michalka, J., 118.
Milks, H. J., 119.
Miller, R. F. See Boughton, I. B., et al., jt. authors, 135.
Minard, E. L., & Jungherr, E., 114.
—. See also Jungherr, E., jt. author, 114.
Mitchell, C. A., & Walker, R. V. L., 109.
Mohamed, M. S., & Greenberg, D. M., 120.
Mondon, E., 116.
Moore, E. N., & Marten, E. A., 119.
Moore, L. A., & Berry, M. H., 120.
Morris, M. L., 120.
Morris, P. G. D., 123.
Morrison, D. B. See Dulaney, A. D. author, 111.
Morton, G. L. See Pinck, B. D., et al authors, 127.
Morton, H. E., & Sommer, H. E., 107.
Mott, L. O. See Stein, C. D., et al. authors, 113.
Moxon, A. L., & Wilson, W. O., 128.
Muñoz, F. J., & Charipper, H. A., 13

Nalbandov, A. See Baylor, M. R. B., et jt. authors, 123.
Neal, R. A. See Schneiter, R., et al. authors, 129.
Nichols, J. E., 137.
Niven, C. F., Jr., & Sherman, J. M., 11

O'Donnell, R. See Beck, M. D., et al authors, 114.
Orr, J. H. See Reed, G. B., et al., jt. auth 127.
Osteen, O. L. See Stein, C. D., et al. authors, 113.
Ottaway, C. W., 124.

Panja, G., & Chatterji, B. C., 109.
Park, R. G., 127.
Parmenter, D., 135.
Passhina, T. S. See Belozersky, A. N. author, 126.
Paterson, J. J., 130.
Pearson, P. B., Sheybani, M. K., & Schn H., 121.
Piérot, 117.
Pinck, B. D., Morton, G. L., & Mat M. R., 127.
Picciotta, V. J. See Thorp, W. T. S., et jt. authors, 128.
Polding, J. B., 132.
Pomeroy, B. S., & Fenstermacher, R., 10
Pommer, A. See Kuscher, A., et al. authors, 116.
Porter, K. R. See Yegian, D., jt. aut 108.
Priouzeau, M., 117.

Rainey, J. W., 108.
Rauss, K., 130.
Raust, R., 132.
Reed, G. B., Orr, J. H., & Reed, R. 127.
Reed, R. W. See Reed, G. B., et al. authors, 127.
Reid, T., 122.
Renoux, G. See Seigneurin, R., jt. aut 124.
Robinson, H. J., & Smith, D. G., 126.
Rosenberg, S. I. See Bierman, W., et jt. authors, 127.
Rosenblum, H. B. See Schneiter, R., et jt. authors, 129.
Rottmann, H., & v. Schalscha-Ehrenfeld, 119.
Rubenstein, A. D., Feemster, R. F., & Sn H. M., 130.
Ruska, H., & Kausche, G. A., 112.
Ryan, A. E. See Jones, C. M., et al. authors, 128.

Saifi, M. F., & Vaughan, J. M., 117.
Salisbury, G. W., 120.
Salomon, L. See Thiéry, J. P., et al. authors, 117.
Salomon, Léone. See Thiéry, J. P., et jt. authors, 117.
Sandiford, B. R., 131.
Sandstedt, H., & Sjöberg, K., 120.
Saphra, I. See Seligmann, E., et al. authors, 109.
v. Schalscha-Ehrenfeld, R. See Rottm H., jt. author, 119.
Scheng, T. D., 128.
Schlenk, F. See Gingrich, W., jt. au 109.
Schlumberger, H. G., 119.
Schmidt, H. See Pearson, P. B., et al authors, 121.
Schneiter, R., Hollaender, A., Cami B. H., Kolb, R. W., Fraser, H. DuBuy, H. G., Neal, R. A., & Ro blum, H. B., 129.

Schnitzer, R. J. See Soo-Hoo, G., jt. author, 126.
Schoening, H. W., 116.
—. See also Dale, C. N., et al., jt. authors, 109.
Schrek, R., 125.
Seigneurin, R., & Renoux, G., 124.
Seligmann, E., Saphra, I., & Wassermann, M., 109.
Sellers, K. C. See Shearer, G. D., jt. author, 128.
Senekjie, H. A., 111.
Sergent, Ed., & Gayot, G., 135.
Sergiev, P. G., 126.
Sforza, P., & Marinoni, F., 107.
Shahan, M. S. See Stein, C. D., et al., jt. authors, 113.
Shearer, G. D., & Sellers, K. C., 128.
Sherman, J. M. See Niven, C. F., Jr., jt. author, 110.
Sheybani, M. K. See Pearson, P. B., et al., jt. authors, 121.
Shook, L. L., 132.
Shwartzman, G., 114.
—. See also Bierman, W., et al., jt. authors, 127.
Sigurdsson, B., 113.
da Silva Leitão, J. L., 115.
—. See also de Aboim-Inglez, A. L., jt. author, 115.
Simms, B. T. See Sugg, R. S., et al., jt. authors, 125.
Sjöberg, K. See Jonsson, G., jt. author, 122.
—. See also Sandstedt, H., jt. author, 120.
Skar, O., 130.
Smith, C. C., Zeek, P. M., & McGuire, J., 118.
Smith, D. G. See Robinson, H. J., jt. author, 126.
Smith, H. M. See Rubenstein, A. D., et al., jt. authors, 130.
Smithburn, K. C., & Haddow, A. J., 113.
—, Mahaffy, A. F., & Haddow, A. J., 113.
Snyman, P. S. See Thomas, A. D., jt. author, 135.
Soltys, M. A., & Taylor, A. W., 108.
Sommer, H. E. See Morton, H. E., jt. author, 107.
Soo-Hoo, G., & Schnitzer, R. J., 126.
Spencer, G. R., Hoyt, H. H., & Whitehair, C. K., 109.
Spitz, S. H. See Loughlin, E. H., et al., jt. authors, 126.
Stein, C. D., Osteen, O. L., Mott, L. O., & Shahan, M. S., 113.
Steinberg, A., 131.
Stewart, W. A., 133.
Stubbs, E. L., 117.
Sugg, R. S., Simms, B. T., & Baker, K. G., 125.
Swan, C., 119.
Sykes, J. F., Gould, I. A., Duncan, C. W., & Huffman, C. F., 122.
Syverton, J. T., & Cowan, I. M., 112.

Tager, M., & Liebow, A. A., 110.
Taliaferro, I. See Haag, H. B., et al., jt. authors, 125.
Tamura, J. T., 127.
Taylor, A. R., 113.
Taylor, A. W. See Soltys, M. A., jt. author, 108.
Taylor, T. J. See Hinshaw, W. R., et al., jt. authors, 109.
Thiéry, J. P., Salomon, L., & Salomon, Léone, 117.
Thomas, A. D., & Snyman, P. S., 135.
Thomson, J. D. See Hines, H. M., et al., jt. authors, 121.
Thorp, W. T. S., Pisciotta, V. J., & Grundy, C. B., 128.
Törnqvist, S. See Åslander, A., jt. author, 131.
Toth, E., 124.
Tunisia. Wk Pasteur Inst., Tunis, 1941, 137.
Twort, C. C. See Baker, A. H., jt. author, 129.

U.S.A. Ann Meet. Ind. vet. med. Ass., 1943, 133.
—. Laws Livestk sanit. Contr., N. Dak., 134.
—. Nat. Live Stk Loss Prev. Bd, 133.
—. Registry vet. Path., Army med. Mus., 132.
U.S.A. Rep. Meet. Emerg. Exec. Comm., Nat. Poult. Improvement Plan, June 1943, 133.
—. Rep N.Y. St. Vet. Coll., Cornell, 1938-39, 1940-41, 136.
—. Rockefeller Fdn., Internat. Hlth Div., Rep. 1943, 137.
—. Rockefeller Fdn, Rev. 1943, 137.
Uruguay. Decree Prod. Anim. Brands, 134.
Uvarov, O., 116.

Vaughan, J. M. See Saifi, M. F., jt. author, 117.
Venn, J. A. J., 123.
Virga, E., 112.

Walker, N. See McLeod, J. W., et al., jt. author, 127.
Walker, R. V. L. See Mitchell, C. A., jt. author, 109.
Wassermann, M. See Seligmann, E., et al., jt. authors, 109.
Weidlich, N., 113.
Welch, H., Grove, D. C., Davis, R. P., & Hunter, A. C., 125.
Wertz, A. W. See Holmes, A. D., et al., jt. authors, 121.
Wheeler, P. A. See Blumenthal, H. T., et al., jt. authors, 117.
White, A. G. C. See Woolley, D. W., jt. author, 110.
Whitehair, C. K. See Spencer, G. R., et al., jt. authors, 109.
Wilkins, W. H., & Harris, G. C. M., 126.
Wilson, J. E., 116.
Wilson, W. O. See Moxon, A. L., jt. author, 128.
Woolley, D. W., & White, A. G. C., 110.
Wundram, G., 129.

Yegian, D., & Porter, K. R., 108.

Zeek, P. M. See Smith, C. C., et al., jt. authors, 118.
Ziegler, P. T., 138.
Zimmermann, A., 124.

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DISEASES CAUSED BY BACTERIA AND FUNGI

BOSWORTH, T. J., & LOVELL, R. (1944). **The occurrence of haemolytic cocco-bacilli in the nose of normal sheep and cattle.**—*J. comp. Path.* **54.** 168–171. **682**

Haemolytic coccobacilli were the predominant organisms obtained from nasal swabs taken from ewes in a flock in which about half the sheep were affected by a sudden outbreak of nasal catarrh. The same organism was isolated from the nose in 40 of 100 healthy sheep, from the trachea in 7 of 84 healthy sheep, and from the nose in 9 of 105 healthy cattle. Only one swab was taken from each animal and it is pointed out that more frequent and thorough examination might show a higher carrier rate.

The organisms showed the morphological and cultural characters of the "haemolytic coccobacilli" which have been isolated by various workers from cases of pneumonia in cattle and sheep. Of 55 strains, mainly from normal sheep, which were examined serologically, 24 fell into subgroup I and one into subgroup II of MONTGOMERIE *et al.* [*V. B.* **9.** 260.], while 11 showed cross-agglutination with sera prepared against both subgroups, and the remaining 19 strains showed no agglutination.—E. G. WHITE.

MALCOLM, J. F., KING, C. W., & CAMPBELL, M. M. (1944). **The features of early mastitis in heifers during the first lactation.**—*Vet. Rec.* **56.** 227–230. **683**

Twenty-eight heifers in a tuberculin-tested herd of over 100 animals were kept under clinical observation throughout the first lactation, and quarter milk samples were examined at weekly or fortnightly intervals for leucocyte count, electrical conductivity, and specific pathogens. The first indications of udder disease in 12 heifers which contracted mastitis were a rise in cell count and conductivity. In all cases, *Staphylococcus aureus* or *albus* was found sooner or later in the milk of the affected quarter. Although the older cows of the herd harboured *Str. agalactiae*, there were no cases of mastitis in the heifers which could be attributed to infection with this organism.—ISOBEL W. BROCKLEHURST.

FINK, J. W. (1944). **Eradication of mastitis from dairy herds.**—*Cornell Vet.* **34.** 144–146. **684**

F. emphasizes, from experience, the absolute importance of segregating diseased and recovered cows. He suggests that the cow lying down with relaxed teats and distended udder, previous to milking, may be infected from the floor, and recommends the fortnightly disinfection of the floor with hot lye solution.—R. A. R.

MORTON, H. E., & SOMMER, H. E. (1944). **The variation of group C hemolytic streptococci.**—*J. Bact.* **47.** 123–128. **685**

A strain of haemolytic streptococcus belonging to group C was studied for colony variation. Mucoid, smooth, rough, and dwarf colony forms were obtained. The dwarf forms varied in diameter from one-seventh to one-third of that of the S colonies. They had an entire edge and a very fine granular surface. In the M colony form, non-haemolytic variants were common. This form fermented sorbitol and mannitol, but not lactose or trehalose. S and D colonies fermented lactose and trehalose, but not sorbitol or mannitol.

Serologically, anti-S serum agglutinated organisms in S and D colony form to equal titre, and those in M form slightly. Colonies in the M form were agglutinated poorly by anti-D serum and also by anti-M serum which agglutinated S and D colonies to a considerably higher titre.—D. L. ROBARTS.

*SFORZA, P., & MARINONI, F. (1942). Nuove ricerche sulla vitamina K, con particolare riguardo alla sua influenza sul potere fibrinolitico dello streptococco emolitico. [**Influence of vitamin K on the fibrinolytic power of haemolytic streptococci**].—*Arch. ital. Sci. farmacol.* **11.** 106–116. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **144.** 77]. **686**

Fibrin obtained from plasma of individuals with various liver disorders, and presumably with defective prothrombin production, was tested against the fibrinolytic effect of *Str. haemolyticus*. Cases in which the time of fibrinolysis was clearly shortened were from those of liver stasis and cirrhosis; the addition of vitamin K caused some return to normal, the effect being independent of the prothrombin content of the blood. Evidently vitamin K exerts some effect beyond that of increasing the blood prothrombin content, but in experimental streptococcal infection in the mouse, vitamin K proved of no value as a prophylactic or therapeutic agent.—ALEX. B. PATERSON.

BEKKER, J. H. (1943). Die Hämodigestion des Milzbrandbazillus. (Schlusswort zu den Bemerkungen des Herrn Dr. L. von Buza). [**Haemodigestive property of *Bacillus anthracis*. (Reply to article by von Buza)**].—*Zbl. Bakt. I.* (*Orig.*). **150.** 326–327. **687**

VON BUZA [*V. B.* **12.** 481.] stated that capsule formation and haemolytic action were directly linked with the virulence of anthrax bacilli. BEKKER found that capsule formation and virulence are linked, but that haemolytic action is not so linked; the bacilli possessed or lost haemolytic action under the influence of various culture methods quite independently of the virulence of the strain.

On another point also Bekker disagrees with von Buza who regarded the haemolytic action as a mutative phenomenon.—J. E.

LAMANNA, C. (1942). **The status of *Bacillus subtilis*, including a note on the separation of precipitinogens from bacterial spores.**—*J. Bact.* **44.** 611–617. **688**

At the Second International Congress for Microbiology (1936), it was agreed to accept *B. subtilis* Cohn 1872, *emendavit* Prazmowski 1880 as the type species of the genus *Bacillus*, and the Marburg strain as the type strain. L. now suggests that the Marburg strain is *B. vulgatus* and should be given specific rank as such. He also recommends that the Ford and Lawrence (1916) organism should be recognized as the standard strain of *B. subtilis*, the original strain having been lost.

Precipitinogens were separated from the bacterial spores of *B. subtilis* and *B. vulgatus* by boiling them in N/20 HCl. There was no cross-precipitation demonstrable between the two types. Preliminary tests indicated that the antigenic substance was a carbohydrate, carried as a prosthetic group in a protein molecule.—ISOBEL W. BROCKLEHURST.

RAINEY, J. W. (1944). **The relationship of bovine to human tuberculosis considered in the light of experience.**—*Vet. J.* **100.** 233–240. **689**

R. claims that there is no substantial evidence to refute the original claim by KOCH that the danger of infection of man by the bovine type tubercle bacillus had been greatly exaggerated. In support of his contention, he cites figures on the incidence of the human and bovine types of disease respectively in Australia.

He has noted that in Fiji and in Tasmania there are dry and wet belts in which there are significant differences in the extent of the bovine disease. In the dry areas the figures are 2% in Fiji and 0·5% or less in Tasmania, whereas in the wet belts they are 20% in Fiji and are "relatively high" in Tasmania. In general, however, Tasmania can be regarded as a district of low rainfall and abundant sunshine. The absence of infection in dry areas is ascribed partly to the maintenance of animals in the open and partly to a loss in pathogenicity of the organism where there is close cropping, with sunshine values exceeding 2,000 hours a year.

Statistics show that in Tasmania the decline in human non-pulmonary TB. in 50 years has been from 23·4 to 9·2 per hundred thousand and of respiratory TB. from 105 to 47 per hundred thousand. In Queensland, on the other hand, which has a higher rainfall and therefore less sunlight, infection in cattle is about 11%: here the decline in the non-pulmonary form of the human disease has been from 63·4 to 2·3 per hundred thousand. R. suggests that the population has acquired some immunity by exposure to bovine type infection.

He also asserts that the figures from other parts of the world fail to show that pasteurization of milk or the eradication of bovine TB. has played any material part in the decline of human non-pulmonary TB. and compares the figures of 2·3 per hundred thousand in Queensland with 4 per hundred thousand in the U.S.A. where bovine TB. has been practically eradicated. He also states that in Devon and Cornwall where heat sterilization of milk had been practised for a long period, the incidence of non-pulmonary TB. was relatively higher than in other parts of England.

He advocates that where the climatic environmental conditions are conducive to a low incidence of bovine TB., pasteurization of milk products or the eradication of the disease should not be attempted, since the human population might thus be deprived of the chance of acquiring some degree of protection against the human type of the disease through prior contact with the bovine type of organism.—R. E. GLOVER.

ERRECALDE, J. E. (1943). El parche tuberculínico e el diagnóstico de la tuberculosis bovina. **[The patc (skin) test in the diagnosis of bovine TB.].**—*Re Med. vet. B. Aires.* **24.** 401–406. **6**

The patch test was carried out together with th intradermal test on 100 cattle. The method used w to apply an ointment containing dead bovine tuberc bacilli and bovine tuberculin to a shaved and washe area on the posterior aspect of the thigh, and to cov the ointment with sticking plaster. A control area w covered with sticking plaster only. Positive reactio to the test, read at 48 hours, varied from slight indur tion to considerable induration with vesicle formatio Forty-three cattle gave a positive reaction to the intr dermal test and 46 to the patch test. In E.'s opinio the latter was the more sensitive test.—I. W. B.

*HERMANSSON, K. A. (1943). Et fall av tuberkul hos älg. **[A case of TB. in an elk].**—*Skand. VetTidsk* **33.** 66. [Abst. from abst. in *Norsk VetTidsskr.* 5 181 & 182]. **6**

TB. of a retropharyngeal lymph node in an evisce ated elk presented for meat inspection was verifie microscopically; the viscera could not be obtained f examination.—J. E.

SOLTYS, M. A., & TAYLOR, A. W. (1944). **The filtr tion of *Mycobacterium tuberculosis* and *Mycobacteriu stercusis* through gradocol membranes.**—*J. Path. Bac* **56.** 173–180. **6**

Filtration experiments were carried out to demon strate the existence of filtrable forms of the tuberc bacillus in cultures, infected bovine and rabbit tissue and human sputum. Viable elements of *Mycobac stercusis* and the human and bovine strains of th tubercle bacillus were constantly demonstrated i filtrates drawn through gradocol membranes of averag pore diameter 2·0μ and 1·5μ. *Mycobact. tuberculos* bovine type was also shown to be capable of passing membrane of A.P.D. 1·0μ in five of eight instance The methods employed did not detect viable element in filtrates drawn through membranes of A.P.D. 0·7μ No evidence, therefore, was found of the presence of filtrable form of the tubercle bacillus.—I. W. B.

YEGIAN, D., & PORTER, K. R. (1944). **Some artifac encountered in stained preparations of tuberc bacilli. I. Non-acid-fast forms arising fro mechanical treatment.**—*J. Bact.* **48.** 83–91. **6**

This is a report of experiments which show th the mechanical effect of a platinum loop in makin smears and of the microtome knife in cutting section of colonies is sufficient to produce non-acid-fast rod and granules from cultures of tubercle and other acid fast organisms. Artefacts resulting from staining pro cedures will be reported in subsequent papers.

Young growth films of tubercle bacilli (huma bovine, and avian types) on Long's synthetic mediu and a variety of other acid-fast organisms were prepare as whole mounts by transferring a little of the film to slide after fixation in formalin and washing in wate Films prepared in this way, care being taken to avoi mechanical damage, showed complete absence of non acid-fast forms.

Similar material transferred to slides and made int a thin film with a platinum loop, fixation being at roo temperature or by gentle heat over a flame, showe non-acid-fast rods and granules and much non-acid fast detritus. The percentage of non-acid-fast form was found to be roughly proportional to the amou of use of the loop in making the film. When olde cultures were used, the same effect was produced b the proportion of non-acid-fast material was very muc less.

Colonies of the organisms, fixed and embedded in paraffin and sectioned, showed that here, too, mechanical damage produced non-acid-fast forms. The latter were especially numerous along the line of knife scratches and in very thin sections.

This work clearly suggests that films or sections should not be used in attempts to demonstrate the natural existence of non-acid-fast forms in cultures of any age.—E. G. White.

Mitchell, C. A., & Walker, R. V. L. (1944). **Preisz-Nocard disease. Study of a small outbreak occurring among horses.**—*Canad. J. comp. Med.* **8.** 3–10. **694**

Six horses in a herd of 11 showed cutaneous lesions. Glanders was suspected, but the mallein test was negative. Swabs were taken from five of the horses, but cultures from these were unfortunately overgrown; g. pigs injected with the cultures, however, developed enlargement and tenderness of the testicular sac and *Corynebacterium ovis* was isolated from the pus. The g. pigs did not develop orchitis, the abscess being confined to the cavity between the visceral and parietal portions of the tunica vaginalis. The affected horses belonged to an isolated stud, and the source of the infection could not be determined.

The serum of ten horses on the affected farm neutralized *C. ovis* toxin; six of these animals presented clinical evidence of infection. Neutralizing antibodies were also demonstrated in other isolated horses which had no known exposure to *C. ovis* infection. The presence of neutralizing antibodies in the blood of apparently normal horses raises the question whether Preisz-Nocard disease does occur in a mild or masked form.

The toxin used did not attain great concentration in culture medium, but 0·5 ml. was lethal for g. pigs weighing 450 g. Cross-neutralization tests failed to show that the toxin elaborated by the strains isolated had any relationship to diphtheria toxin.

—R. Gwatkin (Canada).

Panja, G., & Chatterji, B. C. (1943). **A case of acute glanders in man.**—*Indian med. Gaz.* **78.** 150–151. **695**

A brief note on a case in man proved bacteriologically to be glanders. No history and no P.M. details were obtainable.—V. R. Rajagopalan (India).

Grey, C. G. (1944). **Swine erysipelas.**—*J. Amer. vet. med. Ass.* **104.** 264–268. **696**

A discussion on the epidemiology, symptoms, lesions, cure, and prevention of swine erysipelas as seen in the U.S.A. Serum-vaccination is proving fairly satisfactory in the control of the disease in the badly infected mid-western states. The need for due attention to the hygienic control of sources of infection is emphasized.—R. M. Loosmore.

Spencer, G. R., Hoyt, H. H., & Whitehair, C. K. (1944). **Listerellosis occurring in Wisconsin.**—*J. Amer. vet. med. Ass.* **105.** 195–197. **697**

Three outbreaks of listeriasis in sheep are recorded, with some details concerning symptoms, pathogenesis, and epidemiology. Sulphanilamide did not affect the course of the disease in the one animal treated.

—R. M. Arnold.

Belin, M., & Lagriffoul, A. (1943). La listerellose ovine. Premiers cas constatés en France. **[Listeria infection in sheep in France].**—*Bull. Acad. vét. Fr.* **16.** 376–379. Discussion pp. 378–379. **698**

This is stated to be the first record of the occurrence of listeriasis in sheep in France. The clinical features and bacteriological findings are in accord with those of previously recorded cases in other countries. In the discussion which followed the paper, Forgeot discussed differential diagnosis, with particular reference to virus encephalomyelitis (Borna disease), avitaminosis A and B, and scrapie.—Isobel W. Brocklehurst.

Gingrich, W., & Schlenk, F. (1944). **Codehydrogenase I and other pyridinium compounds as V-factor for *Haemophilus influenzae* and *H. parainfluenzae*.**—*J. Bact.* **47.** 535–550. **699**

Codehydrogenase I and the reduced co-enzyme dihydro-codehydrogenase I promote the growth of *H. influenzae* and *H. parainfluenzae*, and are more efficient than other pyridinium compounds as substitutes for the V-factor.—A. T. Phillipson.

Dale, C. N., Meriweather, H., & Schoening, H. W. (1944). **A Salmonella cholerae suis bacteriophage in swine feces.**—*Amer. J. vet. Res.* **5.** 279–281. **700**

The authors found that they were not always able to demonstrate the presence of salmonella bacteriophage in pigs' faeces. Their work suggests that the presence of bacteriophage may sometimes be one reason why salmonella organisms cannot be recovered from faeces. Disease due to infection with *S. cholerae-suis* may be modified by the presence of bacteriophage. It was, however, shown that bacteriophage failed to protect mice artificially infected with *S. cholerae-suis*.—A. B.

Seligmann, E., Saphra, I., & Wassermann, M. (1944). **Occurrence of some unusual salmonella types in man, including a new type, *Salmonella georgia*.**—*Amer. J. Hyg.* **40.** 227–231. **701**

The isolation of a new type of salmonella, *S. georgia* (VI, VII : b : e,n,z_{15}) is reported. The occurrence of seven unusual salmonella types in man is also reported, *viz*, *S. tennessee*, *S. selandia*, *S. stanley*, *S. arizona*, *S. minnesota*, *S. new brunswick*, and *S. california*. The source of infection in most of these cases was not known.—Anthony Buxton.

Hinshaw, W. R., McNeil, E., & Taylor, T. J. (1944). **Avian salmonellosis. Types of salmonella isolated and their relation to public health.**—*Amer. J. Hyg.* **40.** 264–277. **702**

During the period 1935–43, the authors studied 561 cultures isolated from 353 outbreaks of salmonellosis, mostly from turkeys in California. By far the commonest cause of salmonellosis was *S. typhi-murium* which was isolated from 60% of 291 outbreaks in turkeys and 35% of 43 outbreaks in chickens. A total of 48 salmonella types were isolated from poultry, 42 of which have also been isolated from man.

During the period of the survey, six different salmonella types were responsible for outbreaks of disease on each of two separate ranches. Control of these outbreaks was carried out by blood testing the breeding flocks, both O and H antigens being used, by improving general farm hygiene and sanitation, and by killing off rodents and wild birds found on the premises.

The public health aspect of these poultry diseases is stressed, especially the danger to farm attendants. The authors are of the opinion that many outbreaks of salmonellosis in turkey flocks are started by human carriers. The article contains a table which emphasizes the similarity between the numbers of outbreaks of disease in poultry due to different types of salmonella and the corresponding American and European figures for these diseases in man.—Anthony Buxton.

Pomeroy, B. S., & Fenstermacher, R. (1944). **Salmonella infections in turkeys.**—*Amer. J. vet. Res.* **5.** 282–288. **703**

The frequency and importance of *S. pullorum* infection of turkey poults is emphasized, and an investigation described into the comparative efficiencies of rapid plate tests and tube agglutination tests for the

detection of infection. The authors found that agreement between the rapid whole-blood plate test and the tube test was far less than that between the rapid serum-plate test and the tube test. As has been noted by other workers, " fine " or " pin-point " reactions to the rapid plate tests were due to birds having low-titred sera or, perhaps, sera containing agglutinins for organisms other than the salmonella group which possess some common antigenic factors.—ANTHONY BUXTON.

BROWN, A. L. (1943). **Pullorum control and the practitioner's part in the program.**—*Cornell Vet.* **33.** 147–152. **704**

After giving figures to illustrate the size and importance of the poultry industry in New York State, B. explains the working of the National Poultry Improvement Plan, emphasizing the part played by the practitioners of each state in the carrying out of the pullorum disease eradication phase of the plan. In order to correlate the two phases of the plan, *i.e.* the breeding phase and the pullorum phase, there is a state agency, the board of which consists of representatives of the veterinary profession, the poultry industry, and the departments representing each branch.

The pullorum testing is carried out by veterinarians and approved laboratories on a fee-paying basis. The official plan recognizes the following methods of testing :– (1) the standard tube agglutination test ; (2) the stained-antigen, rapid, whole blood test, and (3) the rapid serum test. The veterinarian conducting the blood test must send reports to the Bureau of Animal Industry, Department of Agriculture and Markets. On the results of the tests, the flocks are classified, according to the percentage of reactors.

Other veterinarians, not actually engaged in pullorum testing, co-operate and give publicity to assist in the carrying out of the disease control programme.—J. D. BLAXLAND.

GENEST, P. (1944). Isolement, chez le porcelet, d'alcaligènes bronchisepticus. **[Isolation of *Brucella bronchiseptica* from piglets].**—*Canad. J. comp. Med.* **8.** 105–107. [In French]. **705**

A report on the isolation of *Brucella bronchiseptica* in pure culture from bronchial exudates of two young cachectic pigs.—L. M. HEATH (CANADA).

CAUDRON, M. (1943). Enzootie pseudobotulinique chez le cheval observée dans le département du Pas-de-Calais. **[Parabotulism in horses in the Pas de Calais].**—*Bull. Acad. vét. Fr.* **16.** 355–357. **706**

An outbreak of botulism or parabotulism was suspected in a stable in which four animals were affected with posterior paralysis, without loss of sensitivity. In one of the horses there was paralysis of the palate and pharynx. In all, there was some degree of congestion of the mucosae. Three of the affected animals died, and the fourth recovered after a convalescence lasting two months.—I. W. BROCKLEHURST.

LEVADITI, J. C., LAMY, R., & KREGUER, A. (1943). A propos d'une paralysie équine mortelle de nature expérimentale indéterminée. **[Epidemic fatal paralysis in horses in France].**—*Bull. Acad. vét. Fr.* **16.** 322–325. **707**

The authors describe an epizootic disease of horses characterized by a motor paralysis, which spread from the hindquarters forward, until death ensued, generally within a few hours. There was no loss of sensitivity or of control over the sphincters. The affected animals ate and drank normally until just before death. In each outbreak, practically all the animals in the stable succumbed.

Histological, bacteriological, and toxicological examinations failed to reveal the cause of the condition but by a process of elimination the authors conclude that the condition is most probably botulism or parabotulism.—ISOBEL W. BROCKLEHURST.

BØE, J., & JONSEN, J. (1943). **On the relation between Fusobacterium and the accompanying spirochetes.**—*Acta path. microbiol. scand.* **20.** 585–596. [Authors' summary copied *verbatim*]. **708**

1. Fusobacterium belongs to a group of bacteria which is very pleomorphic, with a decided tendency to develop atypical forms. 2. The assumption that spirochetes could arise in pure cultures of Fusobacterium found support in the fact that these atypical forms were mistaken for spirochetes. 3. In most cases spirochetes described are artefacts and are not an expression of any biological form. 4. The authors were able to produce typical spiral forms by a few tricks with the staining method, and by choosing cultures where atypical forms were abundant. 5. Fusobacterium and spirochetes are absolutely distinct microorganisms.

TAGER, M., & LIEBOW, A. A. (1942). **Observations on histoplasmosis. Induced infection in the mouse.**—*Yale J. Biol. Med.* **14.** 469–488. **708**

The fungus, *Histoplasma capsulatum*, causes disease in human beings. Natural infection has been recorded in a dog, and there are records which suggest that infection of mice and ferrets may occur, but these records were not accompanied by cultural studies. Invasion of the reticulo-endothelial cells by the fungus is usually generalized, but may be confined to one organ, such as the lungs or adrenals. By intraperitoneal inoculation of the mycelial form of the organism the authors have produced chronic systemic histoplasmosis in mice which is in many respects analogous to the disease in man. The chief anatomical changes produced were hyperplasia of the r.e.s. and infiltration with cells of the monocyte and macrophage type. These cells contain the parasites within their cytoplasm.—E. G. WHITE

NIVEN, C. F., Jr., & SHERMAN, J. M. (1944). **Nutrition of the enterococci.**—*J. Bact.* **47.** 335–342. **710**

The following organisms were used :– *Streptococcus zymogenes*, five strains ; *Str. durans*, five strains ; *Str. faecalis*, five strains, and *Str. liquefaciens*, four strains. The requirements of these organisms for members of the vitamin B complex and for amino acids were examined. All strains required pantothenic acid, nicotinic acid, pyridoxine and biotin, but all were able to synthesize thiamine. Variation was found in the requirements of riboflavin and folic acid. Fourteen of the 19 strains tested were able to grow in a medium containing 13 amino acids ; among the amino acids indispensable to all strains were alanine, threonine, tyrosine and lysine.—A. T. PHILLIPSON.

WOOLLEY, D. W., & WHITE, A. G. C. (1943). **Selective reversible inhibition of microbial growth with pyrithiamine.**—*J. exp. Med.* **78.** 489–497. **710a**

Pyrithiamine, the pyridine analogue of thiamine, will strongly inhibit the growth *in vitro* of organisms which require thiamine for growth (*e.g. Ceratostomella Phytophthora cinnamomi*, and *Chaloropsis thielavoides*). This inhibition is neutralized by the addition of thiamine. Many bacteria which can synthesize thiamine are not affected by pyrithiamine. Organisms (*e.g. Endomyces vernalis*) which can grow when a part of the thiamine molecule is present, are inhibited to a slight extent by pyrithiamine.—E. BOYLAND.

See also absts. **740** (staphylococcus), **864** (pneumococcus, TB.), **74** (*Haemophilus influenzae*), **840** (tularaemia), **860-863** (salmonella) **857** (brucella), **841, 865** (clostridia), **822-829** (antibacterial agents)

DISEASES CAUSED BY PROTOZOAN PARASITES

SENEKJIE, H. A. (1943). **Biochemical reactions, cultural characteristics and growth requirements of *Trypanosoma cruzi*.**—*Amer. J. trop. Med.* **23.** 523–531. **711**

The biochemical reactions of two arthropod strains, two human strains and one armadillo strain of *T. cruzi* were identical, indicating that the species is homogeneous. The organisms grew in serial subcultures, for a limited number of generations, in vitamin media and in egg + liver extract media in the absence of blood, which suggests that they were able to store some of the unknown essential growth factor which occurs in blood and serum. When this stored vital factor was exhausted, the organisms stopped growing unless transferred to a blood medium.

Growth occurred in 13 sugars, without fermentation or gas production in any of them. Methyl red and Voges-Proskauer tests were negative, and there was no production of indole or hydrogen sulphide. Growth in milk was feeble, in contrast to the abundant growth of *Leishmania tropica* in this medium. *L. donovani*, *L. braziliensis*, *L. infantum*, and *L. caninum* do not grow in milk.

The survival time of *T. cruzi* at 40°C. was more than three hours, but at 45°C. it was 15–30 min.

Thiamine chloride, nicotinic acid, and pyridoxine had temporary growth-stimulating properties; ascorbic acid had none, and riboflavin and calcium pantothenate were toxic.

Cultures of *T. cruzi* are described and the preparation is outlined of an egg-liver medium on which growth for 8–10 generations was obtained. *Leishmania* spp. also grew on this medium for up to six generations. —U. F. RICHARDSON.

GOODRICH, H. P. (1944). **Coccidian oocysts.**—*Parasitology*. **36.** 72–79. **712**

This work was originally undertaken in response to a request for a viability test for the sporulated oocysts of *Eimeria tenella* which did not involve feeding them to susceptible chickens. The scope of the investigation was later extended to the oocysts of *E. stiedae* of the rabbit. Viability of oocysts was tested by fracturing their walls to release the spores and then treating the exposed spores at a temperature of 37°C. with a dilute (0·5–5·0%) sterile solution of trypsin adjusted to pH 7·6 with 2% sodium bicarbonate solution. The opening of the spores and the release of active sporozoites occurs within a few minutes. Free spores unopened after 5–10 min. are necrotic and the percentage of such spores may be calculated. [This method has obvious value in tests of the effect of disinfectants on sporulated oocysts, and for other purposes.] Active sporozoites have been obtained from oocysts which have been stored for more than two years in a suitable fluid. G. considers that unless spores are freed in some mechanical way from the impervious ectocysts, there is little chance of their being able to germinate and she believes that in the alimentary tract, fracture of the oocyst wall may be brought about by ingested sand etc. in the muscular region of the pylorus or gizzard. In studies of the oocyst wall, solutions of thioglycollic acid were found to cause swelling of the ectocyst which gradually dissolves, thus leaving the endocyst standing out clearly. The micropyle, which is closed after syngamy, does not appear to reopen. [Certain published figures have shown sporozoites emerging from the micropyle of the oocyst: the present work lends no support at all to this view.] From its characters of impermeability, resistance to weak acids and alkalis, and its indigestibility by pepsin and trypsin, the protein of the ectocyst is considered to be allied to keratin; that it is not true keratin was shown by the absence of birefringence with polarized light.—C. HORTON SMITH.

MAQSOOD, M. (1943). ***Haemoproteus handai* (sp. nov.) occurring in Indian parakeet (Psitticula cyanocephala).**—*Indian vet. J.* **20.** 109–111. **713**

Haemoproteus handai n. sp. is recorded from an Indian parakeet (*Psitticula cyanocephala*). The female gametocyte measured 10–15μ, stained blue with Giemsa, and was halteridium-shaped; the nucleus was situated at one end and pigment granules were scattered throughout the cytoplasm. The male gametocyte measured 7–11μ, with one end pointed; the nucleus was situated at the bulbous end, did not stain as well with Giemsa and pigment granules occurred in groups towards the pointed end. [The parasite was recovered from a dead bird; the details of morphology recorded may therefore not be normal.]—S. N. SAPRE (INDIA).

BISHOP, A., & GILCHRIST, B. M. (1944). **A method for collecting sporozoites of *Plasmodium gallinaceum* by feeding infected *Aedes aegypti* through animal membranes. [Correspondence].** — *Nature, Lond.* **153.** 713–714. **714**

A true prophylactic drug, *i.e.* one which will prevent sporozoite-induced infections, is the most urgent requirement in the chemotherapy of malaria, and it is therefore important to have a convenient method for testing drugs directly on sporozoites. Existing methods of obtaining sporozoites, such as that of dissecting out the salivary glands from infected mosquitoes, are unsatisfactory as the sporozoites are always mixed with, and protected by, fragments of the salivary gland cells. The possibility was explored of obtaining sporozoites free from gland tissue by feeding infected mosquitoes through animal membranes. The skin of chickens 1–3 weeks old proved to be the most suitable membrane. The skin was soaked in absolute alcohol for 30 min., then washed in running tap water, stretched over a piece of 2·5 cm. × 6 cm. glass tubing and fixed in place by a rubber band. When dry the skin is thin and parchment-like and makes a watertight seal with the glass tubing. The highest rates of gorging of mosquitoes were obtained when 1·5–3 ml. of heparinized chick's blood was warmed to 41°–42°C. The outer side of the membrane, which was presented to the mosquitoes, was moistened with saline, as this was found to increase the rate of gorging. The apparatus was placed upon the mosquito-netted top of a jar containing *Aëdes aegypti* so that the surface of the membrane rested upon the netting. Gorging took place in the dark in a moist atmosphere in an incubator at 28°C. Infected mosquitoes, in gorging through a membrane, extruded viable sporozoites into the blood, as shown by the production of infection when the blood was injected into uninfected chicks. *A. aegypti* has also been infected with *P. gallinaceum* by feeding mosquitoes through a membrane upon heparinized chick blood heavily infected with gametocytes.—C. HORTON SMITH.

DULANEY, A. D., & MORRISON, D. B. (1944). **On the preparation and properties of antigens from Plasmodium knowlesi.**—*Amer. J. trop. Med.* **24.** 323–326. [Authors' summary copied *verbatim*]. **715**

1. The antigenic material of *P. knowlesi* parasites is only slightly soluble in saline, more soluble in phosphate or barbiturate buffers of pH 7·8–8·5, and completely soluble when NaOH is added to buffer extracts to give a pH of 9·0 or above. The alkalinity of the phosphate and barbiturate buffers probably accounts

for their efficiency as antigenic extractives. The use of such reagents was suggested by the knowledge that *P. knowlesi* parasites are soluble in 0·5 N sodium carbonate (Sinton and Ghosh, 1934).

2. Phosphate or barbiturate buffer extracts are 6–8 times more active than the saline antigens. Since 0·5 gm. dried parasites represents the average yield of parasites per monkey it may be estimated that such material will furnish 36,000 to 49,000 antigenic units by extraction with phosphate buffer in contrast to 7,000 obtained by saline extraction. These antigenic units represent, respectively, 9,000, 12,250 and 1,750 doses.

3. Sodium hydroxide solutions of parasites ar not satisfactory antigens.

4. It now appears that dehydration of phosphat buffer extracts of wet or dried parasites may offer highly efficient method of storing malaria antigen. Th practical aspects of this method are now being investi gated.

5. The present experimental evidence suggest that the antigen is a lipid-protein complex but a carbo hydrate factor has not been entirely eliminated.

See also abstr. **842** (avian malaria), **708** (relation of *Fusobacterium* an spirochaetes), **904** (avian coccidiosis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

RUSKA, H., & KAUSCHE, G. A. (1943). Ueber Form, Grössenverteilung und Struktur einiger Virus-Elementarkörper. **[Shape, size, distribution, and structure of elementary bodies of certain viruses]**.—*Zbl. Bakt. I.* (*Orig.*). **150.** 311–318. **716**

A study made by means of the electron microscope of the elementary bodies of some viruses gave the following mean measurements (expressed in $m\mu$):– molluscum contagiosum, 255 × 178; infectious ectromelia, 232 × 172; infectious myxomatosis of rabbits, 287 × 233; canary pox, 311 × 263, and vaccinia, 262 × 209. The nature of these bodies in comparison with the nature of bacteria and plant viruses is discussed in connexion with a statistical analysis of the size values obtained. [Apparent errors in the statistical analysis detract from the merit of this paper, *e.g.* the measurements of the long and short axes of the elementary bodies are stated to be normally distributed, but in three instances the figure given for the standard deviation is the same as that shown for the range.]—W. M. H.

HOFMANN, W. (1944). Mitteilung über weitere Versuche mit dem bei der Maus neurotropen Stamm B des Maul- und Klauenseuche-Virus. **[Further research with the B type mouse-neurotropic strain of foot and mouth disease virus]**.—*Zbl. Bakt. I.* (*Orig.*). **151.** 161–167. **717**

In a previous communication [*V. B.* **12.** 579.], it was reported that the 680th passage of the German B type F. & M. virus had been reached by intracerebral inoculation of mice. 973 passages have now been completed. The incubation period and the duration of the disease has gradually become reduced, the mice now dying at about 18 hours after inoculation. The dermatropic character of the virus has almost completely disappeared. Neutralization tests show it to have remained stable as regards type.

Virus from the 400th–600th passage when injected intracerebrally or subcutaneously into g. pigs produced, in 70–80% of cases, profuse salivation followed by death, but with no specific lesions of F. & M. disease; the remaining 20–30% of the g. pigs then resisted intradermal injection of the hind pads with the standard B type strain. Material from later passages did not produce this immunity. An aluminium hydroxide vaccine prepared with neurotropic virus was capable of producing a certain degree of immunity in g. pigs.

—W. M. HENDERSON.

*CALDEVILLA, R. (1938). Un caso demostrativo de modificacion del virus callajero de la rabia. **[A modified rabies virus]**.—*Anal. Inst. Victor Babes, Bucarest.* **9.** 43–47. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 18]. **718**

In animals inoculated with a street virus, after its second passage there was a prolonged period of incubation and, although the animals died, they did not have typical symptoms of rabies and the histological lesions were not typical.

*BOTEZ, M. (1938). La diffusion du virus rabiqu dans la région occidentale de la Roumanie. **[Inc dence of rabies in western Rumania]**.—*Anal. Ins Victor Babes, Bucarest.* **9.** 35–38. [Abst. from abs in *Bull. Inst. Pasteur.* **42.** 20]. **71**

B. suggests that in certain parts of Rumania, rabi is carried by animals other than dogs, thus providir a reservoir of infection.

*VIRGA, E. (1938). I. Le vaccinazioni antirabbic dal 1902 al 1935. II. Sulla virulenza e sulla resisten ai vari agenti di attenuazione del virus rabbico fiss **[I. Antirabic vaccination from 1902 to 1935. I Virulence and resistance of fixed rabies virus various attenuating agents]**.—*Anal. Inst. Vict Babes, Bucarest.* **9.** 233–236 & 236–238. [Abs from abst. in *Bull. Inst. Pasteur.* **42.** 24]. **7**

From 1887–1934 the Pasteur method was used Palermo. 28,052 persons were treated, with a mortali of 0·21 %. After 1934 the vaccine described by Punto was used, the results obtained being better than tho with the Pasteur method.

*ANGIOLANI, S. (1938). Breve riassunto del trat mento antirabico dal 1924 al 1937 nel Istituto an rabico di Ancona. **[Rabies vaccination from 19 to 1937 at Ancona]**.—*Anal. Inst. Victor Bab Bucarest.* **9.** 1–4. [Abst. from abst. in *Bull. In Pasteur.* **42.** 24]. **7**

Carbol vaccine as described by Pantoni was us at Ancona. 890 persons bitten were treated, with mortality of 0·33%.

BALOZET, L. (1942). La vaccination antirabique d animaux en Tunisie du 1er janvier au 31 décemb 1941. **[Antirabies vaccination of animals in Tunis 1941]**.—*Arch. Inst. Pasteur Tunis.* **31.** 371–373. **7**

Antirabies vaccination of dogs in Tunisia w authorized in 1931, the ether-virus vaccine of REMLING & BAILLY being employed. In 1941, 369 dogs we vaccinated and 95 revaccinated, as a general precauti whilst eight animals were given a vaccine after cont with animals suspected of rabies. Since the incepti of the service, 3,981 general preventive vaccinations h been carried out in dogs, and 64 vaccinations in do which had previously been vaccinated, but later h been exposed to rabies. No disease occurred in th animals. One case of rabies occurred in 56 hor vaccinated after exposure to infection, and four ca occurred out of 47 cattle vaccinated in the same circu stances.—U. F. RICHARDSON.

SYVERTON, J. T., & COWAN, I. M. (1944). **Bird p in the sooty grouse, Dendragapus fuliginosus fuligi sus, with recovery of the virus.**—*Amer. J. vet. R* **5.** 215–222. **7**

The occurrence of fowl pox as an infectious dise of the sooty grouse is described for the first time. T disease was present from 1939–41 in wild grouse south-eastern Vancouver Island, British Columb

'irus from the grouse was indistinguishable from a nown strain of fowl pox virus in its pathogenic, histo- athologic, and morphologic characteristics ; chickens ecovered from infection with this strain were immune o fowl-pox virus.—J. D. BLAXLAND.

'DREGUSS, M. (1943). Über die Infektion von Schweinen mit menschlichem Influenzavirus unter natürlichen Verhältnissen. **[Natural infection of pigs with the virus of human influenza].**—*Arch. Virusforsch.* **3.** 35–48]. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **144.** 450]. **724**

During an epidemic of human influenza in 1941 [presumably in Hungary], a similar condition was observed in pigs. Serological examination is said to have indicated that the disease amongst pigs was caused by the human type of virus. No virus could be demonstrated in the nasal secretions of the affected animals. It was assumed that infection was transmitted by the attendant or through the food.—W. M. HENDERSON.

TAYLOR, A. R. (1944). **Chemical analysis of the influenza viruses A (PR8 strain) and B (Lee strain) and the swine influenza virus.**—*J. biol. Chem.* **153.** 675–686. **725**

Influenza viruses A and B and swine influenza virus were grown on the chorio-allantoic fluid of chick embryos, and were concentrated and purified by the combined procedures of absorption in, and solution from, washed chicken red blood cells. The final concentrates of the three types contained 2–5 mg. virus per ml., and were subjected to elementary and constitutional analyses. The particulate materials were found to be essentially similar complexes of protein, lipoids, and carbohydrate with small amounts of nucleic acid of the desoxyribose type. The small differences in composition lay more particularly in the total lipoid content and in the proportion of the various lipoid constituents. Influenza virus A and swine influenza virus had very similar total lipoid contents of about 24%, but the lipoid content of influenza virus B was definitely lower, whilst the phospholipoid content of the swine virus was lower than that of viruses A and B. The total cholesterol content of virus B was 30–40% lower than that of either of the other two types. Petroleum ether extracted only a very small amount of fat from the fully active virus. The relatively high carbohydrate content was of special note since it was much larger than could be accounted for in combination with nucleic acid, with suggestion of the presence of mannose or glucose-galactose in complex form.—A. E.

SIGURDSSON, B. (1944). **Studies on influenzal infections in the chick-embryo.**—*J. Immunol.* **48.** 39–47. **726**

S. has studied infections of the chick embryo with human and swine influenza viruses in relation to the temperature of incubation and the age of the embryos. A temperature of 35°–36°C. was found to be more suitable for the growth of virus than one of 39°–40°C. The concentration of virus, measured by the agglutination of chicken red cells, was found to be low and irregular at the higher temperature. The strains of virus used killed the embryos regularly at the lower temperature.

There was no marked difference in susceptibility between the 7- and 12-day embryos. The routes of inoculation employed were onto the chorio-allantoic membrane and into the amniotic sac.—D. L. HUGHES.

SMITHBURN, K. C., & HADDOW, A. J. (1944). **Semliki Forest virus. I. Isolation and pathogenic properties.**—*J. Immunol.* **49.** 141–157. **727**

SMITHBURN, K. C., MAHAFFY, A. F., & HADDOW, A. J. (1944). **Semliki Forest virus. II. Immunological studies with specific antiviral sera and sera from humans and wild animals.**—*Ibid.* 159–173. **728**

I. This virus was isolated from mosquitoes caught in the Semliki Forest in Western Uganda during field investigations on the epidemiology of yellow fever. The virus was easily established in white mice by intracerebral inoculation, becoming highly virulent following serial passage. Mouse-passage material was capable of infecting g. pigs, rabbits, rhesus monkeys, and red-tail monkeys (*Cercopithecus nictitans*) by intracerebral inoculation. The principal pathogenic action was on the central nervous system and was characterized by paralysis, prostration, and death. The lesions observed were not unlike those caused by the equine encephalomyelitis viruses. The formation of protective antibodies was noted in animals which did not become infected when inoculated with the virus. Preliminary ultrafiltration experiments [results to be published later] indicate that the virus is probably one of the smallest yet discovered.

II. By means of immunological tests the virus was differentiated from the viruses of yellow fever, Bwamba fever, St. Louis and Japanese B encephalitis, Eastern and Western equine encephalomyelitis, and the West Nile virus. A limited immunity survey of man and wild animals in Uganda showed the presence of protective antibodies in man and in some primates, particularly the red-tail monkey.—W. M. HENDERSON.

WEIDLICH, N. (1942). Beitrag zum Vorkommen der ansteckenden Blutarmut der Pferde in der Slowakei. **[Equine infectious anaemia in Slovakia].**—*Berl. Münch. tierärztl. Wschr.* Aug. 7th. 242–243. **729**

E.I.A. became very widespread after the mobilizations and demobilizations of 1938, 1939, and 1941. The disease was declared notifiable, and diseased, suspected, and contact cases were slaughtered ; some compensation was paid.—J. Z.

STEIN, C. D., OSTEEN, O. L., MOTT, L. O., & SHAHAN, M. S. (1944). **Action of chemical and physical agents on the virus of equine infectious anemia.**—*Amer. J. vet. Res.* **5.** 291–302. **730**

Experiments are described which were designed to obtain data on the prevention of possible contamination of biological products with the virus of E.I.A.

(1) *Action of chemicals.*—The virus in serum when tested after one month's storage at 5°C. was inactivated by 1 : 10,000 mercurous acetate plus 1 : 400 phenol, by 1 : 1,000 crystal-violet plus 1 : 2,000 phenol, by 1 : 200 phenol, and by 1 : 1,000 formalin, but resisted 1 : 10,000 methiolate plus 1 : 400 phenol and 1 : 286 phenol plus 1 : 286 ether. The virus in brain tissue plus, 1 : 250 formalin was attenuated after 13 days at 5°C. and inactivated after 30 days, and in brain tissue plus 1 : 100 chloroform, was attenuated after 60 days and inactivated after 90 days.

(2) *Effect of physical agents.*—Virus in serum from acute cases survived, in an attenuated form, 60 min. at 58°C. and 30 min. at 60°C., but was inactivated by 60 min. at 60°C. The virus was resistant to cold storage, freezing, and desiccation, being effectively preserved by such treatments.

(3) *Effect of fractionation and dialysis on virus in serum.*—The diffusate from serum dialysed in a vegetable parchment paper bag against stationary distilled water was virulent, while the diffusate from a no. 300 cellophane bag under the same conditions was avirulent, but serum dialysed in a no. 300 cellophane bag against running tap water was not infective. No active virus could be detected in the euglobulin, pseudoglobulin, or albumin fractions, nor in the final filtrate following

salting out and dialysis, it having been shown that 31·5% ammonium sulphate did not destroy the virus.

Serum or tissue suspensions in which the virus had been inactivated by various means failed to protect horses against subsequent exposure to active virus.

It is concluded that E.I.A. virus in equine antisera can be inactivated by holding it at 59°C. for one hour, by certain chemical preservatives, or by the combined processes of fractionation, heating, and dialysis used in refining certain antisera.—W. M. Henderson.

*Csiszár, V. (1942). **[Diagnosis of swine fever before appearance of the haemorrhagic syndrome].**—*Állatorv. Lapok.* **65.** 1–3. [In Hungarian]. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 437]. **731**

A specific, characteristic odour is described which is detectable in the flesh and in the submaxillary salivary glands of pigs in the early stages of swine fever.—E. C.

Jungeblut, C. W. (1944). **Variability of Theiler's virus of mouse encephalomyelitis.**—*Science.* **99.** 434–435. **732**

Rapid passage in mice of this virus induced, on certain occasions, a variant with enhanced power of invading the central nervous system following intraperitoneal injection. This mutation appeared to be aided by previous contact with some normal sera. The variants obtained remained stable over 3–5 mouse passages. Serological test of one variant showed it to be antigenically identical with the parent strain.—W. M. Henderson.

Jungherr, E., & Minard, E. L. (1944). **The pathology of experimental avian pneumoencephalitis.**—*Amer. J. vet. Res.* **5.** 125–134. **733**

The pathology of experimental avian pneumoencephalitis was compared with that of avian encephalomyelitis in an effort to improve the means of differential diagnosis. In avian pneumoencephalitis there is catarrhal tracheitis and bronchitis, infiltrative sacculitis of the pulmonary air sacs, and haemorrhages and hyaline necrosis in the adenoid sheaths of the spleen. The most constant lesions in the central nervous system are marked endothelial hyperplasia and numerous scattered glia foci of protoplasmic astrocytes with hypertrophic processes.

In avian encephalomyelitis there is no inflammation of the respiratory tract; there is hyperplasia of the lymph follicles in the visceral organs, occasional myelin degeneration of the peripheral nervous system, central neuritis of the large neurons, and a predominance of perivascular granulomatous foci in the c.n.s.

The condition produced by the pneumoencephalitis virus shows no similarity to the pullet-disease syndrome prevalent in the New England states.—W. M. H.

Minard, E. L., & Jungherr, E. (1944). **Neutralization tests with avian pneumoencephalitis virus.**—*Amer. J. vet. Res.* **5.** 154–157. **734**

This describes the technique adopted for a quantitative neutralisation test with avian pneumo-encephalitis virus in chick embryos 8–10 days old, and reports the results of a very limited survey of the geographical distribution of domestic fowls possessing the neutralizing antibodies.—W. M. Henderson.

Shwartzman, G. (1944). **Recovery of the virus of lymphocytic choriomeningitis from the erythrocytes of infected animals.**—*J. Immunol.* **48.** 111–127. **735**

The virus of lymphocytic choriomeningitis may be recovered from the red cells of experimentally infected mice and g. pigs. The association of the virus with the red cells is firm, and its concentration in these cells bears no relation to the concentration in the serum or the washings of the red cells. The infectivity of a strain of virus for red cells is related to its virulence for the species of animal. Thus a strain of virus virulent for g. pigs is more infective for g. pig red cells than for those of the mouse. This relationship may help epidemiologically to identify strains and to trace their animal source.—D. L. Hughes.

Burnet, E., & Cabasso, V. (1942). Observations sur la Rickettsia conjunctivae de Coles et sur l'autre microorganisme semblable de la conjonctive du mouton. **[Observations on *Rickettsia conjunctivae* and other similar micro-organisms from the conjunctiva of sheep].**—*Arch. Inst. Pasteur Tunis.* **31.** 179–184. **736**

In investigating cases of rickettsial conjunctivitis of sheep in Tunisia, both *R. conjunctivae* and the associated intracellular organism which Coles had suggested might be a symbiont were encountered. The disease in Tunisia sometimes takes a chronic course with periods of quiescence and exacerbation. In such cases and in subinoculations, in which attempts to separate the organisms were made, both organisms appeared, sometimes together and sometimes separately. It is tentatively suggested that only one organism may be involved, the two forms being accounted for by a process of cyclical development.—U. F. Richardson.

Beck, M. D., Bodily, H. L., & O'Donnell, R. (1944). **A strain of typhus rickettsiae isolated from the brain of a wild rat in California.**—*Publ. Hlth Rep., Wash.* **59.** 701–712. **737**

An outbreak of typhus occurred in California in 1916, but no repetition of the disease had been recorded. Following the occurrence of a case in an egg packer at a poultry plant, an investigation was made by trapping mice and rats on the premises, and by inoculating brain suspensions from them into g. pigs. As a result, a strain of endemic typhus was isolated from the brain of one of three rats, and it was shown that murine typhus exists in California county.—U. F. Richardson.

Anderson, C. R. (1944). **Survival of Rickettsia prowazeki in different diluents.**—*J. Bact.* **47.** 519–522. **738**

A method is described of determining the influence of various diluting fluids on the survival of rickettsia of the typhus group in suspensions. *R. prowazeki* was found to survive longest in sterile skim milk (48 hours), whilst in distilled water the infectivity of suspensions was largely lost after six hours. It was not confirmed that the addition of 1% glutathione had any beneficial effect on survival.—U. F. Richardson.

Bengtson, I. A. (1944). **Complement fixation in the rickettsial diseases—technique of the test.**—*Publ. Hlth Rep., Wash.* **59.** 402–405. **739**

The complement-fixation test in rickettsial diseases is a quantitative test, as there is some cross-fixation between the various rickettsia. Tests are run with dilutions of the suspect serum and antigens of various rickettsia grown in the yolk sac of fertilized hen's eggs; standard serum composed of pooled serums from recovered g. pigs is titrated with each test. Details are given of the methods of making and titrating the antigens, haemolytic systems, sera, and complements, and of the methods of recording test results.—U. F. R.

See also absts. **897**, **903** (rabies control), **767** (equine infectious anaemia), **771** (swine viruses), **905** (influenza), **700** (bacteriophage).

IMMUNITY

ELAUNAY, A. (1943). Tactisme leucocytaire et exotoxine staphylococcique. [**Chemotaxis of leucocytes and staphylococcus exotoxin**].—*C. R. Soc. Biol. Paris.* **137.** 209–210. **740**

Injection of sterile broth intradermally into a g. pig, roduced a local aggregation of leucocytes within six ours but no skin necrosis. When staphylococcal exoxin was present in the broth there was marked ecrosis but little leucocytic accumulation until after 24 ours. D. suggests that the injured tissues produce a eucotaxic substance, but that this cannot take effect ntil the antagonistic effect of the exotoxin has been vercome.

In an immunized animal, injection of staphylococcal xotoxin produced no necrosis but a local leucocytic ccumulation appeared within six hours, similar to that roduced by injection of broth in an unimmunized nimal.—R. M. ARNOLD.

ONGFELLOW, D., & LUIPPOLD, G. F. (1943). **Immunization to typhoid and paratyphoid fevers.**—*Amer. J. Hyg.* **38.** 139–151. **741**

Reviews are given of research work on typhoid mmunization, typhoid-paratyphoid vaccination, and ross-immunization between members of the typhoidaratyphoid group. Vaccine strains of *S. paratyphi* A nd *S. paratyphi* B were selected on the basis of virulence nd immunogenic potency for mice. By means of a nouse-protection test, a significant degree of cross-mmunity could be demonstrated between any one of he triad studied, *viz*, *S. typhi* and *S. paratyphi* A and B, and either of the other two members. No light was hed on the role of agglutinins in the production of mmunity, and discrepancies between agglutinin and protective titres illustrated in mouse experiments indicated a potential error in accepting the agglutinin content of a serum as an index to its protective potency or as an estimate of the immunity of the individual from which it had been obtained.—R. O. MUIR.

ALEXANDER, H. E., HEIDELBERGER, M., & LEIDY, G. (1944). **The protective or curative element in type B *H. influenzae* rabbit serum.**—*Yale J. Biol. Med.* **16.** 425–434. **742**

The experiments described were designed to determine whether the protective and curative fraction of type-specific *Haemophilus influenzae* antiserum is related to the anti-carbohydrate antibody. Type B antisera were absorbed with specific polysaccharides by three different methods. Passive mouse protection tests were then performed to assess the value of the absorbed and unabsorbed fractions respectively. It was found that when the anti-carbohydrate antibody was removed, the serum was devoid of protective power.

—R. E. GLOVER.

BURNET, E., & CABASSO, V. (1942). Action des extraits huileux filtrés, de bacilles acido-résistants. (Huile de paraffine et B. de Stéphansky). [**Action of oily filtered extracts of acid-fast bacilli**].—*Arch. Inst. Pasteur Tunis.* **31.** 194–196. **743**

A large lesion of rat leprosy was washed and separated as far as possible from surrounding tissue, then incubated for 14 days at 37°C. in about 4–5 times its volume of liquid paraffin. The material was then filtered and inoculated intratesticularly and intraperitoneally into g. pigs and rats. This filtrate produced, in the inoculated animals, an exudative pseudomembranous peritonitis comparable to that caused by the injection of dead bacilli suspended in oil. The false membranes formed consisted of a network of fine threads which showed the same acid-fastness as the bacilli. It is concluded that the reaction is due to bacterial products dissolved by the oil during maceration.—U. F. RICHARDSON.

See also absts. **833** (sulphonamide allergy), **715** (antigens of plasmodia), **690** (patch test for TB.), **739** (c.-f. test for rickettsia), **720-722** (rabies immunization), **865** (gas gangrene antitoxin), **887** (vaccine lymph).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

BARROS, J. (1942). O Berne. [**Ox warbles**].—*Bol. pec., Lisboa.* **10.** No. 1. 121–132. **744**

This is a review of present knowledge of *Hypoderma* infestation which is apparently common in Portugal. B. calls for urgent control measures.

—MILLER WATSON.

DA SILVA LEITÃO, J. L. (1942). Contribuoïção para o estudo do " Dermestes vulpinus " (Fabricius, 1781). Sua importância económica como agente de svalorizador das peles conservadas. [*Dermestes vulpinus* **infestation of hides and skins**].—*Bol. pec., Lisboa.* **10.** No. 1. 61–64. **745**

This is a description of *D. vulpinus*, which causes considerable losses to stored hides in Portugal. The author calls for research into methods of combating the pest, since naphthalene is only slightly effective as a repellent.—MILLER WATSON.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

—. (1942). Conferencia nacional contra la hidatidosis. Ley No. 12,733. Mayo 20 al 23 de 1942 Buenos Aires. [**National Conference on Control of Hydatidosis (Law No. 12,733) held at Buenos Aires, 20th-23rd May, 1942**]. pp. 151. Buenos Aires : Talleres Gráficos " Gadola." [8vo]. **746**

Delegates from a number of provinces were present at the Conference, at which papers were presented on the incidence and control of human hydatid disease. A proposal was made that all dogs should be registered, that stray dogs should be destroyed, and that registered dogs should be given periodic anthelmintic treatment.

—G. J.

DE ABOIM-INGLEZ, A. L., & DA SILVA LEITÃO, J. L. (1942). Dois casos de localização anormal do " Ascaris lumbricoides " do porco. [**Unusual localization of *A. lumbricoides* in two pigs**].—*Bol. pec., Lisboa.* **10.** No. 1. 119–120. **747**

The authors report the finding of an adult female *A. lumbricoides* in the pancreatic duct of one pig and of three adult *A. lumbricoides* in the bile ducts of another.

—MILLER WATSON.

DOUGHERTY, E. C. (1944). **The genus *Metastrongylus* Molin, 1861 (Nematoda : Metastrongylidae).**—*Proc. helminth. Soc. Wash.* **11.** 66–72. **748**

D. discusses the systematics of the genus *Metastrongylus*, in which genus he recognises three species, *M. apri*, *M. salmi*, and *M. pudentotectus*. He gives the diagnostic characters of the genus and of the three species, but states that further work is needed on the females of *M. apri* and *M. salmi* to ascertain the degree of overlapping in these two cases.—T. E. GIBSON.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

*Mondon, E. (1940). Relation d'un cas de lymphosarcome chez un cheval. **[Lymphosarcoma in a horse]**.—*Rec. Méd. vét.* **116.** 414–417. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 101]. **749**

A 13-year-old mare developed a lymphosarcoma of the left prescapular lymph node, with metastases in the pericardium and aorta, and under the skin of the right side of the neck.—E. Cotchin.

Kuscher, A., Pommer, A., & Kment, A. (1944). Zur Kasuistik bösartiger Neubildungen im Luftsack des Pferdes. **[Malignant growths in the guttural pouches of horses]**.—*Berl. Münch. tierärztl. Wschr./ Wien. tierärztl. Mschr.* Feb. 18th. 53–56. **750**

Neoplasms of the guttural pouches are very rare and a brief review of the literature shows that probably only one recorded case was diagnosed during life—by incision of the pouch. The authors describe in detail a squamous-cell carcinoma, probably arising from the septum between the two pouches, in an 11-year-old cart horse. The animal was said to have shown symptoms for about a year—nasal discharge, salivation, dyspnoea with laryngeal sounds, disturbances of swallowing (regurgitation, difficult swallowing, or complete failure), head held extended, and loss of flesh. At one period there was some pyrexia, due to secondary bacterial infection of the pouches. Radiographic examination (lateral) showed a neoplasm causing thickening of the lateral and posterior walls of the pharynx, and this completely explained the various symptoms. (A radiograph of the affected pouches and one of a normal head are shown for comparison.) Endoscopic examination failed to show the nature of the disease, and it was impossible to pass a catheter into the pouches because of the thickened valves guarding their orifices. Without the use of X-rays it would have been difficult to distinguish the condition from strangles with suppuration of the pharyngeal lymph nodes, since the latter condition produces a similar appearance of the pharynx.—E. G. White.

*Mertens, V. E. (1942). Krebs der Fleischer. **[Cancer in butchers]**.—*Mschr. Krebsbekpfg.* **10.** 219–221. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 102]. **751**

In Bavaria in 1935, the death rate from cancer was higher among butchers than among the average population, so that the suggestion that has been made that butchers are protected against cancer by the exercise of their profession requires further critical investigation.—E. Cotchin.

Dmochowski, L., & Gye, W. E. (1944). **Influence of milk factor on the incidence of breast cancer induced by oestrone.**—*Brit. J. exp. Path.* **25.** 115–118. **752**

The factor present in the milk of high cancer strain female mice increases the susceptibility of offspring to mammary carcinoma, whether this is of spontaneous origin or induced by oestrone. Lack of this active milk factor decreases the susceptibility of mice to the induction of breast cancer, irrespective of their genetic constitution.—Isobel W. Brocklehurst.

Wilson, J. E. (1944). **Observations on fowl paralysis and some current conditions in poultry problems.**—*Vet. Rec.* **56.** 521–524. **75**

This paper is a review of recently published work dealing mainly with fowl paralysis. The probable infectious nature of the disease is recognized and the methods of its transmission, prevention, and control are discussed, particular stress being laid on the necessity for strict isolation of young stock during the first week of life and the selection of breeding stock with the intention of building-up disease-resistant flocks.

"Six-day chick disease" and salmonella infection are also discussed briefly.—J. D. Blaxland.

DISEASES, GENERAL

Schoening, H. W. (1944). **War and postwar disease control problems.**—*J. Amer. vet. med. Ass.* **104.** 129–132. **754**

The future activities of the U.S. veterinary services are considered. Most of the developments will be concerned with preventive medicine. A beginning of such work has been made with the poultry conservation programme in which recommendations are made for increasing production and decreasing losses in poultry. Similar programmes to cover the production and conservation of other animals are regarded as very desirable. A scheme for swine production is probably the most urgent. There is still a wide field for research on many problems; greater co-ordination would improve the efficiency of such research. The danger of introduction of various exotic diseases is stressed. These dangers are increasing as contacts with other countries become wider and transport becomes more rapid. It is necessary, therefore, that all veterinarians should be able to recognize diseases hitherto not present in the U.S.A. It is anticipated that much of the re-stocking of devastated countries will be undertaken by the U.S.A. This is regarded as an additional stimulus for making plans to ensure that all animals are as free as possible from disease.—D. D. Ogilvie.

Uvarov, O. (1944). **Qualitative urine analysis in the dog and its clinical significance.**—*Vet. Rec.* **56.** 237–239. Discussion p. 240. **755**

Urine analysis in dogs is dealt with, including methods of estimation of the colour, reaction, specific gravity, albumin, bile salts and pigments, sugar, deposits, ketone bodies, indican, haemoglobin, etc. A summary is given of 145 cases in which urine analysis (38 specimens) aided diagnosis.

Typical urine analysis charts are given for acute, subacute, and chronic nephritis; the value of these charts for the differential diagnosis of diabetes mellitus and "rheumatoid" patients is also shown. Cases present more difficulty than dogs in this connexion, and most of the records here given concerning cats deal with specimens collected at autopsy.

In the discussion it was stressed that blood urea figures are of more significance than those of albumin urea.—C. V. Watkins.

Forsell, G. (1939). Uppkomsten av larynxförträngningen vid vänstersidig recurrensförlamning. **[The mechanism of narrowing of the larynx in one-sided recurrent nerve paralysis in the horse (roaring)]**.—*Beretn. 5. nord. Vet.-møde, 1939.* pp. 771–78 [German summary]. [German translation appears in *Berl. Münch. tierärztl. Wschr.* Nov. 22nd. 56 566. (1940)]. **7**

From a survey of the theories and from the results of laryngoscopic observations, F. states that "roarers" or "whistlers" the larynx becomes abnormally narrowed during respiration because, due

paralysis of the left recurrent laryngeal nerve, the left arytenoid cartilage falls inwards ; the vocal cords on each side behave like the arytenoid cartilages. The resultant stenosis with each respiration causes laboured respiration and production of the characteristic noise. —J. E.

*Priouzeau, M. (1942). Le problème de la myoglobinurie chez le cheval. [**Equine myoglobinuria paralytica**].—*Bull. Acad. vét. Fr.* **15.** 110–112. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 112]. **757**

P. discusses the condition and describes examinations made of the blood and urine. It was noted that cases of equine myoglobinuria commonly coincided with cases of catarrhal jaundice and urticaria in cattle. —E. Cotchin.

*Piérot. (1942). De la paraplégie hémoglobinurique du cheval. [**Equine myoglobinuria paralytica**].—*Bull. Acad. vét. Fr.* **15.** 112. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 112]. **758**

P. explains the symptoms and lesions of equine myoglobinuria as being due primarily to pressure on vessels and nerves by an enlarged spleen (splenitis). The examining committee to which this thesis was submitted present the objections to such a theory.—E. C.

*Thiéry, J. P., Salomon, L., & Salomon, Léone. (1942). Etude d'une enzootie française d'encéphalomyélite équine. [**An epizootic of disease in horses in France characterized by encephalomyelitis**].—*Bull. Acad. vét. Fr.* **15.** 103–106 & 237–259. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 129]. **759**

The authors studied an enzootic type of encephalomyelitis responsible for the deaths of over 300 horses in western France from July to November, 1941. Horses only were affected ; the disease appeared in animals at pasture or in the stable, only 15–20% of affected animals recovering. During the disease, the icterus index was raised and the urine bile-stained. Transmission experiments, using rabbits, g. pigs, mice, cats, and sheep, were unsuccessful. Viruses, bacteria, or parasites could not be incriminated, but the presence of microscopic foci of degeneration and inflammation in the liver led the authors to postulate a toxic action of alimentary origin as the cause of the disease.—E. C.

Stubbs, E. L. (1944). **Blindness with papilledema in calves.**—*J. Amer. vet. med. Ass.* **105.** 209–211. **760**

Four cases are described of blindness with papilloedema in heifers in a Guernsey herd. The animals were from dams which were not closely related, but each of the cases could be traced back to a famous Guernsey strain. Vitamin A deficiency may have been concerned, but no other symptoms of this deficiency were seen.—E. G. White.

*Glässer, K. (1943). Über die vielörtliche, hyalinschollige Herz- und Skelettmuskelentartung bzw. den enzootisch auftretenden Herz- und Kreuzschlag des Schweines. [**Multiple hyaline heart and muscular degeneration in enzootic apoplexy in pigs**].—*Berl. Münch. tierärztl. Wschr.* pp. 42–45. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 97]. **761**

This condition, first described by G. in 1912, is accompanied by the appearance of multiple areas of hyaline degeneration in cardiac and skeletal muscles. Range and fattening pigs or, rarely, sows are affected : the animal dies suddenly after a few brief cries and convulsive movements—generally at meal-time or after unusual exertion or excitement. The lesions resemble to some extent those of equine myoglobinuria. The cause is unknown : bacteria or parasites are apparently not responsible. It is suggested that, as possible preventive measures, good hygiene and adequate and suitable diet be provided with an optimum carbohydrate intake.—E. Cotchin.

Matthias, D. (1944). Die Veränderungen der Schilddrüse beim sogenannten Herztod der Schweine. [**Thyroid lesions in cardiac syncope in pigs**].—*Z. InfektKr. Haustiere.* **60.** 296–323. **762**

This is a detailed account of the changes observed in the thyroid gland in pigs dying from cardiac syncope (*Herztod*). The work is based on examination of 64 cases and includes an account of the normal thyroid of the pig, with references to previously published work. Pathological changes were found in 53 animals and in some of the remaining 11 it was probable that death was due to conditions other than *Herztod*. The thyroid gland of affected pigs was bluish-red or blackish-red in colour : in only a few cases was there an increase in weight above what is usually considered normal. The histological changes are classified in three groups. Group I—This is the commonest form : the epithelium is lifted from the wall of the acini due to accumulation of colloid beneath the lining cells ; the capillaries show hyperaemia. Group II—The follicles are uniformly small and the general structure of the gland is compact ; there are papilliform projections of the follicular epithelium and also formation of columns of epithelial cells and acini between the normal acini (interfollicular). Group III—This is the least common form : the gland shows a diffuse parenchymatous hyperplasia with large follicles and some interfollicular epithelial columns.

These features are considered to indicate a condition similar to thyrotoxicosis in man, a suggestion made earlier by Dobberstein, under whose direction M. carried out this work. Clinical symptoms, seasonal and epidemiological features, and histological findings are all in accordance with this view. It is not known whether the changes in the thyroid are primary or whether they are secondary to changes elsewhere. —E. G. White.

Saifi, M. F., & Vaughan, J. M. (1944). **The anaemia associated with infection.**—*J. Path. Bact.* **56.** 189–197. **763**

It was found that anaemia associated with mild, subacute, and acute infections was normocytic or microcytic. An increased reticulocyte count was found commonly in chronic cases with a semi-anaemia. Increased bone-marrow activity was seen in some cases, but there was no aphasia of erythropoietic tissue. It is suggested that anaemia associated with infection is due to interference with the synthesis of haemoglobin. —A. T. Phillipson.

Kagan, B. M. (1944). **The serum proteins in diseases of the heart and kidneys.**—*Amer. J. clin. Path.* **14.** 327–332. **764**

The ranges and average values of serum albumin and serum globulin from over 300 patients are tabulated. The lowest figures (average 4·1%) for total serum protein were obtained in cases of nephrosis. High values (6·6%) for total protein occurred in cases of acute glomerulonephritis and embolic nephritis. In the presence of peripheral oedema with right-sided heart failure, the serum protein concentration is low, whereas it is not low in left-sided heart failure. Determination of serum proteins may be of help in diagnosis and in determination of the progress of patients.—E. Boyland.

Blumenthal, H. T., Lansing, A. I., & Wheeler, P. A. (1944). **Calcification of the media of the human aorta and its relation to intimal arteriosclerosis, ageing and disease.**—*Amer. J. Path.* **20.** 665–687. **765**

By means of stained sections and micro-incineration, the authors have studies the distribution and amount of calcium deposition in the human aorta. It was found

that calcification of the media precedes the formation of intimal plaques and that the latter do not occur in the absence of medial changes (calcification, syphilitic aortitis, or fibrosis). Calcification of the media was directly related to age and was not influenced by sex or by a variety of diseases, with the exception of hypertension in which there was considerably more calcification than in non-hypertensive individuals.—E. G. W.

SMITH, C. C., ZEEK, P. M., & MCGUIRE, J. (1944). **Periarteritis nodosa in experimental hypertensive rats and dogs.**—*Amer. J. Path.* **20.** 721–735. **766**

A summary of recorded cases of naturally occurring periarteritis nodosa in animals is given in a table: the list of species comprises the ox, pig, dog, rabbit, and rat. During experiments on rats and dogs in which hypertension was produced by wrapping the kidneys with silk, it was found at autopsy that 26 of 62 rats and four of eight dogs showed lesions of periarteritis nodosa. Control animals were free from such lesions. Two factors seemed to be concerned in the occurrence of the disease—a high mean blood pressure and marked per-renal suppurative lesions. Further work on the pathogenesis of the condition is in progress.—E. G. W.

LUTSCH, E. (1943). Die Sternzellenhämosiderose in der Leber bei Schlachtpferden aus Luxemburg. **[Haemosiderosis of the Kupffer cells of the liver in slaughter horses].**—*Arch. wiss. prakt. Tierheilk.* **78.** 316–325. **767**

Various German workers have suggested that haemosiderosis of the liver in the horse indicates the presence of infectious anaemia. Others have found haemosiderosis in areas where infectious anaemia is not known to occur. L. examined the livers of 75 horses slaughtered at the abattoir at Luxemburg. The Duchy of Luxemburg has for some years been free from E.I.A., although the disease formerly occurred there. Haemosiderosis was present in 52 animals; in 22 it was slight, in 14 moderate, and in 15 severe. These results suggest that the finding of haemosiderosis of the liver (Kupffer cells) is not necessarily indicative of E.I.A.—E. G. WHITE.

I. BELLOCQ, P., & LOUF, R. (1943). Purpura hémorragique chronique d'origine hépatique. **[Chronic purpura haemorrhagica of hepatic origin].**—*Bull. Acad. vét. Fr.* **16.** 149–152. **768**

II. BELLOCQ, P., & LOUF, R. (1943). Purpura hémorragique chronique d'origine hépatique (hémogénie de P.-E. Weil). Lésions nécropsiques. **[Chronic purpura haemorrhagica of hepatic origin. Lesions].**—*Ibid.* 226–228. **769**

III. BELLOCQ, P., & LOUF, R. (1943). Purpura hémorragique chronique d'origine hépatique. (Hémogénie de P.-E. Weil). **[Chronic purpura haemorrhagica of hepatic origin].**—*Ibid.* 229–232. **770**

I. A case is reported of chronic purpura haemorrhagica in a mare. The early manifestation was epistaxis and later there were numerous petechial haemorrhages in the skin and visible mucous membranes; fresh crops of petechiae appeared every few days. Various treatments, such as the intravenous injection of isotonic calcium chloride solution and injections of polyvalent serum, were tried with unsuccessful or only temporarily successful results.

The coagulation time of the blood was 1½ hours, the clot did not retract, the serum was expressed slowly, and it was deeply pigmented. There is no mention of the bleeding time. Tests for bilirubin in the serum gave strongly positive results. The red blood cell count was 12 millions per cu. mm., haemoglobin (Tallqvist) 90%, and the colour index 0·49. Immature r.b.c. were rare; there was a marked fragility of the corpuscles. A differential count gave monocytes 57·4% and lymphocytes 9·8%.

The authors compare this disease with the haemogenic disease of Weil [Werlhof's disease or primary thrombocytopenic purpura], which among other possible causes may be associated in human medicine with hepatic insufficiency, and they consider it to have been of a similar type.

II. Details are given of the P.M. findings in a case of this disease. The authors consider that the pathological and anatomical evidence indicate that the condition may have a hepatic origin. They suggest that the damaged liver cannot synthesize prothrombin, and so a hypothrombinaemia results. The liver injury consists of a degenerative hepatitis, and its extensiveness prevents any beneficial action following the administration of vitamin K.

It is considered that the evidence justifies this condition being included in the haemogenic syndrome.

III. A case of chronic purpura haemorrhagica of hepatic origin is described in a thoroughbred mare which had been sold four times in five years. Various unsuccessful attempts to treat the condition are described, and the results of a differential blood count are given; excessive numbers of mononuclears were observed. A diminution in the number of platelets was also noted.

The clinical syndrome was dominated by cutaneous haemorrhages, and petechiae in the mucous membranes, especially in the lips, cheeks and gums, and also by epistaxis, haematemesis, and melaena. The authors point out that blood examination at the time of purchase would reveal the presence of the disease.

—J. G. CAMPBELL.

MICHALKA, J. (1942). Die Krankheiten des Zentralnervensystems beim Schwein. **[Diseases of the central nervous system of swine].**—*Arch. wiss. prakt. Tierheilk.* **78.** 87–128. **771**

This is a comprehensive review of the subject, giving the advances in the last ten years and including M.'s own extensive work. Of special interest for the clinician and laboratory worker is the chapter on infectious encephalomyelitis [Teschin disease]. The review covers 36 pages and deals with the following. Section (1) with hereditary conditions such as cerebral hernia and hereditary shivering; section (2) with forms of lepto- and pachymeningitis, both from the clinical and pathological-anatomical points of view; section (3) with non-purulent forms of encephalomyelitis in rabies and infectious encephalomyelitis, with infectious diseases affecting the brain in various degrees, and with the nervous conditions, secondary in character, of swine fever, Aujeszky's disease, piglet influenza, swine pox, paratyphoid, swine erysipelas, listeria infections, and certain conditions of unknown aetiology. Sections 4–6 deal with the purulent (especially *Corynebacterium pyogenes* infection), haemorrhagic, and parasitic forms of encephalomyelitis, section (7) with pseudoencephalitis forms (pronounced changes in the ectodermal tissues, reaction in the mesenchyme absent or insignificant) produced by parasitic infestations and poisoning, and section (8) deals with nervous disorders due to metabolic disturbances, such as avitaminoses, hypocalcaemia, and auto-intoxication.—J. Z.

*ATS, K. (1942). **[Tooth abnormalities in pigs].**—*Inaug. Diss., Budapest.* pp. 38. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 540]. **772**

An analysis is given of the effect of wear on pig's teeth. In 1·38% of jaws examined, extra teeth were found and in 9·8% at least one tooth had failed to develop. Caries was seldom encountered. Discoloration was noted in 50% of cases.—C. W. OTTAWAY.

ROTTMANN, H., & v. SCHALSCHA-EHRENFELD, R. (1944). Drei Jahre Sterilitätsbekämpfung in Ost-Oberschlesien. [**Three years' sterility campaign in eastern Upper Silesia**].—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Jan. 21st. 34–35. **773**

A brief description is given of the disease conditions in herds of regions devastated during the Polish retreat in 1939. Brucellosis, trichomoniasis, and infertility were rife. These diseases were combated by the importation of fresh cattle into the district, by twice yearly examination and treatment, and by due attention to hygienic and housing conditions, which were stated to be very poor. There is no information of technical value in the article.—D. N. SPRIGGS.

MOORE, E. N., & MARTEN, E. A. (1944). **The rôle of microörganisms in reproductive disorders of the chicken.**—*Amer. J. vet. Res.* **5.** 256–261. **774**

The results are described of autopsies and bacteriological examinations made on hens from an experimental flock of over 1,000 birds, the object being to investigate the possible role of bacteria as contributory factors in the aetiology of reproductive disorders.

1,051 hens were examined, 274 or 26·1% being affected with reproductive disorders and 777 or 73·9% having died from other causes. Routine cultures were taken from the heart blood, liver and spleen in every case. Organisms were isolated from 501 birds, cultures being obtained from 44·5% of the hens with reproductive disorders as compared with 48·8% in the other group. 61·3% of the organisms isolated were either *Staphylococcus aureus* or *albus*, and 26·7% were *Bacterium coli*. The remaining 12% included *Bacillus subtilis*, *Streptococcus viridans*, and haemolytic streptococci, *Salmonella* spp., and *Pasteurella aviseptica*. Pathogenicity tests with the isolated organisms showed that 54·9% were capable of causing illness or death. Thirteen out of 38 cockerels developed a partial paralysis within a few days of inoculation with 0·1–1·0 ml. of *Bact. coli* culture. Twelve of the 13 received only 0·1 ml. Symptoms and histopathologic findings were not typical of neurolymphomatosis.

The authors consider that, although organisms were isolated from 47·7% of the birds examined, in view of the absence of any significant difference between the two groups of birds, they were of little or no aetiological significance in connexion with the reproductive disorders.—J. D. BLAXLAND.

MILKS, H. J. (1944). **The uremic complex.**—*Cornell Vet.* **34.** 87–98. **775**

This is an interesting and detailed account of the uraemic complex in dogs as observed at Ithaca Veterinary College, N.Y. A description is given of eight cases of dogs with uraemia-like symptoms and the P.M. findings are given in the cases which were suitable for such study.—G. D. S.

SCHLUMBERGER, H. G. (1944). **Origins of the cell concept in pathology.**—*Arch. Path.* **37.** 396–407. **776**

This is a historical review of the evolution of the ideas which gave birth to VIRCHOW's "Die Cellulärpathologie". The lectures which formed this great work contained little that was new and much which was subsequently proved wrong, but it made the medical profession aware of what pathologists had accomplished and explained the significance of their findings. Virchow was an outstanding contributor to original work in normal and pathological histology, a physician who knew the needs of his profession, and a professor whose opinions were respected. Thus the series of lectures which he gave in the spring of 1858 served as an introduction to existing knowledge of the cellular structure of the body and its application to pathology and medicine.

S. has made a valuable contribution in placing the work of Virchow in its true relation to knowledge previously acquired. This interesting account makes full use of quotations from a large number of articles, extending from the day of the first compound microscope to the publication of Virchow's famous book.
—E. G. WHITE.

SWAN, C. (1944). **A study of three infants dying from congenital defects following maternal rubella in the early stages of pregnancy.**—*J. Path. Bact.* **56.** 289–295. **777**

The macro- and microscopic characters are described of the congenital cataract and heart disease [see also GREGG (1941). *Trans. Ophthal. Soc. Aust.* **3.** 35, and SWAN *et al.* (1943), *Med. J. Aust.* **2.** 201.] encountered in three infants whose mothers had suffered from rubella in the second month of pregnancy. Histological examination of the cataractous lenses confirmed the clinical finding that there was no resemblance to any of the types of cataract hitherto described. The lesions consisted in mass necrosis of the nuclear portion of the lens, and in gross degenerative changes in, and distortion and disorientation of, the lens fibres formed subsequently from surviving cells in the equatorial region. In all three cases, the ductus arteriosus was widely patent, and all showed variable patency of the foramen ovale; one case had a defect of the interventricular septum. Discussing the possible aetiology of the cardiac defects, S. considers it not unreasonable to infer that the causative agent of rubella had produced some structural alteration in the wall of the ductus arteriosus, which prevented its closure. This view finds confirmation in evidence from other sources which indicates that the critical period for the development of congenital cardiac defects is from the fifth to the eighth week of intrauterine life, *i.e.*, in the precise period during which the mothers suffered from rubella in the present cases. Lesions present in the kidneys were confined to the glomeruli, which possibly lends further support to the suggestion that the causative factor of rubella acts primarily on the vascular tissue. From the histological changes described, it seems probable that the cataract and heart disease are only the more obvious manifestations of a widespread attack by the agent of rubella upon the tissues of the embryo, and that embryonic cells are more susceptible to this agent than are those of the adult.—N. J. SCORGIE.

See also absts. **753** (poultry diseases in Great Britain), **901**, **902** (livestock diseases in the Gold Coast), **904** (in Tunisia), **886** (in Indiana), **889** (in N. Dakota), **891** (disease spread by livestock shows), **706**, **707** (epidemic paralysis in horses in France), **788** ("wobbly" horses), **843** (calf "scours"), **779** (frigidity in rabbits).

NUTRITIONAL AND METABOLIC DISORDERS

ELVEHJEM, C. A. (1943). **Biological significance of nutrients.**—*Med. Clin. N. Amer.* **27.** 277–286. **778**

In the opening paper of a symposium on nutrition, E. discusses briefly the interrelationship of nutrients and shows how dependent one factor is upon another for the proper functioning of the animal economy. Enzyme and enzyme-vitamin relationships are especially considered, and the significance of minerals is also dealt with.—R. ALLCROFT.

BERTHELON, & BINET, G. (1943). Étude sur la frigidité

de la lapine. **[Frigidity in the female rabbit].**—*Bull. Acad. vét. Fr.* **16.** 50–53. **779**

With the introduction of rationing in France, rabbit breeding has markedly increased in both rural and urban districts to the detriment of the rules of hygiene and animal nutrition. Consequently the incidence of sexual frigidity in the female rabbit has increased and on occasion has assumed enzootic proportions.

Feeding experiments were carried out with 17 rabbits. During the winter of 1941–42 the rabbits were fed with hay, morning and evening. Beetroots or artichokes were given at mid-day. In March, the animals had hay alone. At the end of April, they received every day, hay in the morning, and green forage at mid-day and in the evening. They were not given drinking water. The animals used for food were in good condition, but 14 of the rabbits exhibited persistent frigidity throughout the experiment. Treatment with anterior pituitary oestradiol benzoate and diethyl stilboestrol was unsatisfactory, and it is concluded that frigidity is a symptom of genital dysfunction and that the condition cannot be overcome by the stimulation of oestrus.—S. JAMIESON.

BRUCE, E. A. (1944). **Earth-eating by lamb in British Columbia.**—*Canada. J. comp. Med.* **8.** 114–116. **780**

In British Columbia, earth-eating by lambs has been reported from certain ranges in the dry interior of the province. The condition is said to be becoming more common, and it is more noticeable in some years than in others. Blood for calcium and inorganic phosphorus determinations was collected from lambs slaughtered in Vancouver, B. C. and for comparative purposes samples were secured from sheep originating in the dry interior of the province and from Alberta sheep. The results of the investigation are summarized as follows :– the blood of sheep from the dry interior is normal in Ca but low in inorganic P ; there is no evidence that lack of Ca or low blood P is the cause of earth-eating by lambs ; physical factors associated with over-grazing may account for the condition.

—P. J. G. PLUMMER (CANADA).

SANDSTEDT, H., & SJÖBERG, K. (1943). Orienterande undersökningar angående blodfosfatasreaktionens värde för klinisk diagnostik vid mineralbristsjukdomar hos svin. **[The use of the blood phosphatase test for the clinical diagnosis of mineral deficiencies in pigs].**—*Skand. VetTidskr.* **33.** 641–658. [English and German summaries]. **781**

It was found that the phosphatase test was of some value as an indicator of incipient Ca or P deficiency, but much more work on the subject is required.—J. E.

MOHAMED, M. S., & GREENBERG, D. M. (1943). **A tracer study with Mn^{56} on chicks with perosis produced by a synthetic manganese deficient diet.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 197–200. **782**

Chicks reared on a synthetic manganese-low ration containing 2·8 mg. Mn per kg. of feed, but of normal Ca and P content, developed perosis in about two weeks. Control chicks on a ration containing 59·6 mg. Mn per kg. showed no signs of perosis. Radioactive Mn was administered to groups of deficient and control chicks, half of each group being given the Mn orally and the other half by subcutaneous injection. Estimation of the distribution of Mn in the tissues of these chicks 72 hours after the administration of the radioactive Mn showed that the major part of the Mn whether administered orally or by injection was excreted by both the deficient and the control chicks, but the deficient chicks retained a greater proportion of the Mn than did the controls. Nearly all the tissues of the Mn-deficient chicks showed retention of the administered Mn and the liver retained most. No Mn was demonstrable in the bone of either group when the dose was given orally.—R. ALLCROFT.

MOORE, L. A., & BERRY, M. H. (1944). **Effect of colostrum on the vitamin A and carotene content of blood plasma of new-born calves.**—*J. Dairy Sci.* **27.** 867–873. [Authors' summary slightly amended]. **783**

1. The vitamin A content of the blood plasma of dairy calves at birth was low but at the end of 24 hours usually showed about a 5-fold increase with the intake of colostrum.

2. Maximal vitamin A and carotene values were attained at about three days of age after which there was a gradual decline.

3. There was no marked difference between breeds in the vitamin A content of the blood plasma at comparable ages ; however, the carotene content of the blood plasma of the Jersey and Guernsey breeds was three to four times higher than for the Holstein breed.

4. In three cases neither the plasma vitamin A nor carotene values showed an increase even though the calves apparently consumed the colostrum. These calves died from infection.

5. In three cases where the colostrum was withheld and whole milk was fed, the plasma vitamin A and carotene content showed very little increase. Two of these calves died of infection.

6. The plasma vitamin A and carotene values did not reach the maximum values where the calves were removed at 12 and 24 hours after birth.

7. The intake of colostrum probably gives the calf a chance to build up a considerable reserve of vitamin A in the liver. If the calf does not receive the colostrum, that reserve is not built up and this may have considerable effect on the health of the calf during the first two months.

SALISBURY, G. W. (1944). **A controlled experiment in feeding wheat germ oil as a supplement to the normal ration of bulls used for artificial insemination.**—*J. Dairy Sci.* **27.** 551–562. **784**

It was found that feeding of 1 oz. of wheat germ oil in addition to the ration given, which consisted of a mixture of grains supplemented with bone meal and salt, did not increase the volume of semen produced or the spermatozoa concentration in the semen, nor did it improve the motility of the spermatozoa or the fertility of the treated animals.—G. D. S.

MORRIS, M. L. (1944). **Mortality of mammalian young with possible nutritional causes.**—*J. Amer. vet. med. Ass.* **105.** 80–82. **785**

A high mortality frequently occurs amongst the newborn of all the species of domestic mammals, for which no adequate cause can be found either in the clinical manifestations or at P.M. examination. It was thought at one time that these losses amongst the newborn and in the suckling period might be prevented by including good quality protein in the dam's ration, but M. has obtained evidence that neither protein quality nor quantity is the sole aetiological factor. Studies on the blood of pups dying as a result of an apparent deficiency in the milk of the dam have revealed a fall in the number of red blood cells (to as low as 1·5–2·5 million per cu. mm.) and a drop in haemoglobin (to 7·5 g. per 100 ml.). This suggested that the cause of death might be related to the absence of a haemopoietic factor or factors in the milk of the dam. In the case of one affected litter the results obtained, both in resumption of growth rate and restoration of the normal blood picture, following frequent injections of a liver extract,

re stated to have been very satisfactory. It seems, owever, that all liver extracts may not contain the ssential haemopoietic factor, for another litter of naemic pups failed to show any response to treatment vith a different batch of liver extract. Folic acid con-entrate administered parenterally also produced a narked rise in r.b.c. and in Hb, and pyridoxine hydro-hloride given subcutaneously to anaemic pups pro-luced a rise in the number of r.b.c.

The necessary factors (vitamin B complex) which prevent mortality in the newborn are probably present in wheat offals in adequate amounts, but not in maize nd its by-products. Oats, which probably contain the factors necessary for normal lactation, do not appear to contain them to a sufficient extent, and it is therefore suggested that for horses and cattle an adequate ration should contain at least 1,200 lb. per ton of a combination of the whole grains of wheat, maize, oats and barley, and also a good quality lucerne meal.—N. J. Scorgie.

Frost, D. V., & Dann, F. P. (1944). **Unidentified factor(s) in yeast and liver essential to cure of achromotrichia in dogs on synthetic diets.**—*J. Nutrit.* **27.** 355–362. **786**

Seven pups (six bitches and one dog) were fed a purified diet and received synthetic B-complex supplements orally or by injection throughout the experiment. The experiment lasted for 17 months, except in the case of two animals which were sacrificed after about 12 months following the onset of a severe bronchial infection after a period of severe anorexia. The response of the dogs to both methods of vitamin administration (oral and parenteral) appeared to be equal.

The dogs which received supplements of thiamine, riboflavin, nicotinamide, pantothenate, pyridoxine, and choline developed achromotrichia in 2–11 months and there was decreased hair growth during this period. Inositol, *p*-aminobenzoic acid, and biotin were not effective in preventing greying of the hair which first occurred at the nape of the neck and base of the tail. Administration of liver fractions or of whole dried brewer's yeast did prevent achromotrichia and brought about complete cures, with a general improvement in body tone and in the blood picture.

From these results, it is concluded that an as yet unknown factor or factors in yeast or liver plays an essential role in pigmentation of hair. It is also recorded that none of the bitches came into oestrus while on the experimental diet.—R. Allcroft.

Holmes, A. D., Jones, C. P., Wertz, A. W., Esselen, K., & McKey, B. V. (1944). **The ratio of ascorbic, nicotinic, and pantothenic acids, riboflavin and thiamin in late summer milk.**—*J. Dairy Sci.* **27.** 849–855. [Authors' summary copied *verbatim*]. **787**

Fifteen samples of late summer milk produced under typical modern dairy farm conditions, were assayed for ascorbic, nicotinic, and pantothenic acids, riboflavin, and thiamin. The average vitamin content of the milk was ascorbic acid 18·6 ± 0·69 mg. nicotinic acid, 1·1 ± 0·10 mg., pantothenic acid 3·66 ± 0·31 mg., riboflavin 1·37 ± 0·08 mg., and thiamin 0·44 ± 0·04 mg. per liter. The ratio has been computed for each vitamin to the other four vitamins of the group. For instance, considered on the basis of the thiamin content of the milk, the ascorbic acid is 41·6 times, nicotinic 2·5, and riboflavin 3·3 times its thiamin content, whereas the recommended vitamin allowances for infants are in the ratio of ascorbic acid 75 times, nicotinic acid 10 times, and riboflavin 1·5 times that of thiamin. Hence the milk under consideration would have to be fortified with ascorbic and nicotinic acids to meet the recommended allowances for infant feeding.

Errington, B. J., Hodgkiss, W. S., & Jayne, E. P. (1942). **Ascorbic acid in certain body fluids of horses.**—*Amer. J. vet. Res.* **3.** 242–247. **788**

The average ascorbic acid content per 100 ml. of the body fluids examined was :– plasma 0·73 mg.; aqueous and vitreous humours 20–22 mg.; spinal fluid 1·70 mg., and semen 0·86 mg. No constant rise in plasma ascorbic acid was observed as the result of giving one dose of up to 30 g. ascorbic acid *per os*, but a subcutaneous or intravenous injection of 10–20 g. caused a marked and rapid rise. The plasma level remained higher for a longer period after subcutaneous injection than after intravenous injection. In cases of periodic ophthalmia, the ascorbic acid content of the aqueous humour was less than half the average normal content. In horses with "wobbles", a disease in which there are degenerative changes in the spinal cord, the ascorbic acid content of the spinal fluid was slightly lower than normal. Low fertility did not appear to be associated with a low level of ascorbic acid in the semen. No correlation was observed between the ascorbic acid content of the blood plasma and that of the other fluids examined.—E. M. Cruickshank.

Pearson, P. B., Sheybani, M. K., & Schmidt, H. (1943). **The metabolism of ascorbic acid in the horse.**—*J. Anim. Sci.* **2.** 175–180. **789**

Shetland ponies were maintained on a controlled diet of dried beet pulp, yellow maize, casein, salts, and a vitamin A and D concentrate. After three months on this diet, which furnished little or no ascorbic acid, the plasma ascorbic acid level was found to have a mean value of 0·32 ± 0·13 mg. % for 30 observations on five ponies, in marked contrast to values of 0·73 mg. and 0·12 mg. % reported by other workers. The daily urinary excretion of ascorbic acid varied considerably among the five ponies and, for 30 observations, the average was 44·4 ± 25·8 mg. Following an oral administration of 6 g. of ascorbic acid, the plasma ascorbic acid rose from a mean level of 0·29 ± 0·14 mg. % to 0·44 ± 0·21 mg. % (15 observations on five ponies). Similarly, in these five ponies the mean urinary ascorbic acid output rose from 38·8 ± 19·7 mg. per day to 111·6 ± 73 mg. in the first 24 hours after ingestion of the ascorbic acid. These increases were highly significant, although the percentage recoveries of ascorbic acid in the urine were very low. The results showed that a definite although limited assimilation of ascorbic acid is possible in the horse, in contradistinction to the findings of Errington *et al.* [see preceding abst.] for the horse and to those of Knight *et al.* (1941) for the cow. Bacterial destruction of ascorbic acid in the stomach of the horse is substantial, but is probably not as complete as in the rumen of the cow.

When 6 g. of ascorbic acid in solution were injected into the jugular vein, considerable variation between the five ponies was observed in the urinary excretion of ascorbic acid in the first 24 hours, the percentage recoveries ranging from 31·0 to 77·3. At the end of the same period, the plasma ascorbic acid still remained above its initial level in four out of five ponies, thus indicating that elimination or destruction of the injected ascorbic acid was still incomplete.—W. R. Muir.

Hines, H. M., Lazere, B., Thomson, J. D., & Cretzmeyer, C. H. (1944). **A study of neuromuscular regeneration under different levels of vitamin C intakes.**—*J. Nutrit.* **27.** 303–308. **790**

The extent and rate of muscle and nerve regeneration following complete denervation of the gastrocnemius muscle was studied in g. pigs receiving different levels of vitamin C. The regenerating muscles of

animals on suboptimal intakes (0·5 and 1·0 mg. daily) of vitamin C were relatively weaker than those of animals on adequate intakes (2·5 mg. or more daily). The former also exhibited numerous capillary haemorrhages. It is suggested that the retarded functional recovery of the muscles in animals on low intakes is due to a lack of the proper quality or quantity of collagenous intercellular substances required for regeneration. Daily intakes of 50 mg. of vitamin C were no more effective in promoting regeneration than intakes of 2·5 mg.
—E. M. Cruickshank.

*Lecomte, A. (1941). Acétonémie des vaches laitières. [**Acetonaemia in milch cows**].—*Rec. Méd. vét.* **117.** 297–308. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 107]. **791**

'L. differentiates two types o acetonaemia in milch cows, the "normal" type associated with no special pathological signs and with a small output of ketone bodies, which is due to indigestion, lack of fats, poor nutrition, or liver damage, and the pathological type, with a high output of ketone bodies and accompanied by severe clinical manifestations. The latter type is of two kinds, pure acetonaemia and acetonaemia associated with hypocalcaemia. The former is treated by udder insufflation, salt deprivation, and administration of 200–250 g. sodium bicarbonate and 200–250 g. sugar for 5–8 days, followed by pasture feeding if possible. The hypocalcaemic type requires also simultaneous treatment with Ca. L. states that insulin-sugar therapy, although it improves the general condition, does not produce any reduction in ketone excretion.
—J. G. Carr.

*Jonsson, G., & Sjöberg, K. (1942). B_1-vitamin-behovet och acetonkroppsbildningen vid äggviterik utfodring av råttor. [**Vitamin B_1 content and acetone body formation in rats fed on protein-rich food**].—*Svensk VetTidskr.* p. 41. [Abst. from abst. in *Skand. VetTidskr.* **32.** 458 and 459]. **792**

In rats fed excessive protein and no carbohydrate, the protein is broken down to fat and acetone bodies, thus causing acetonaemia. This can take place in either the presence or absence of vitamin B_1, and therefore excessive protein feeding works as a saving in the B_1 requirement. Acetonaemia arising in the above manner is not harmful.—J. E.

*van der Meulen, J. B. (1942). Over de oorzaken en de prophylaxe van kalfziekte en kopziekte (grastetanie) bij rundvee. [**Cause and prevention of grass tetany in cattle**].—*Tijdschr. Diergeneesk.* p. 194. [Abst. from abst. in *Skand. VetTidskr.* **33.** 432]. **793**

The pathogenesis of "milk fever" is explained by the hypothesis that there is a loss of calcium from the bones and also from the nervous system, in order to supply Ca for reproductive purposes. Ca deprivation of the nervous system causes tetany with tremor, which gives place to narcosis (coma of "milk fever") after this hiatus in the nervous system has been filled up by the magnesium available in the circulating blood. "Grass tetany", it is suggested, arises as follows:—during lactation the blood and bones lose Ca and tetany arises as in the circumstances stated above, but if there is no free Mg in the blood, the stage of narcosis does not supervene. Adequacy of Ca and Mg in the food prevents both conditions.—J. E.

See also abstr. **760** (vitamin A in blindness in calves), **686, 768–770** (vitamin K), **803** (vitamin C), **699, 710, 710a, 711** (growth factors for micro-organisms).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Haak, D. (1942). Untersuchungen an eineiigen und zweieiigen Rinderzwillingen hinsichtlich der Aehnlichkeit morphologischer und physiologischer Merkmale. (Vorläufige Mitteilung.) (**Observations on uniovular and binovular bovine twins regarding similarity in morphology and physiology. Preliminary note**].—*Züchtungskunde.* **17.** 326–330. **794**

H. investigated the degrees of similarity which occur between uniovular and binovular twins in cattle. By comparison of head and body measurements and productivity of 231 binovular and 19 uniovular pairs of twins, he found that a "similarity quotient", details of which are given, of 2,615–3,000 could be taken as the criterion of uniovular ["identical"] twins, whilst a quotient of below 2,538 was indicative of binovular twins. Comparison of the twins with measurements given in the literature for single calves showed that twins are significantly smaller at all stages of development. Since their proportions are comparable with those of single calves, this does not offer sufficient basis for excluding twins from breeding operations. More important factors are the higher mortality among twin calves, the sterility of freemartins, and the greater incidence of placental diseases and impaired reproductive capacity among cows producing twins.—E. S.

Sykes, J. F., Gould, I. A., Duncan, C. W., & Huffman, C. F. (1944). **Observations on the effects of an anterior pituitary preparation administered to lactating dairy cows.**—*J. Dairy Sci.* **27.** 539–543. **795**

Injection of an alkaline extract of the anterior pituitary gland into lactating cows produced an initial increase in the percentage of fat in the milk, and moderate increases in lactose and solids-not-fat. When the injections were continued for more than five days the fat, lactose, and solids-not-fat usually declined to very low levels. Swelling of the udder and ropy milk accompanied these changes. The injections produced cystic ovaries in all cows, and mummified foetuses were removed from two of the three pregnant animals. There is evidence that the changes in the fat content of the milk are not due to the gonadotropin contained in the extract.—J. M. Robson.

Reid, T. (1944). **The "holding up" and "letting down" of milk.**—*M[ich]. S[t]. C[oll]. Vet.* **4.** 128–136. **796**

A general discussion dealing with the anatomical and physiological mechanisms involved in the secretion and excretion of milk from the udder. Most of the references cited have already been abstracted in this *Bulletin*.—N. J. Scorgie.

Krumdieck, N. (1943). **Erythropoietic substance in the serum of anemic animals.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 14–17. **797**

Serum from rabbits made acutely anaemic and chronically anaemic by removal of blood was injected intravenously into healthy rabbits in which the haemoglobin levels, blood counts, and bone-marrow cell counts were made each day for five days following injection. Similar observations were made on control rabbits which received the same amount of serum from healthy donor rabbits, and on normal rabbits which received no serum. There was no significant change in the red blood cell count or haemoglobin values in either the experimental or control animals, but in each of the experimental recipient groups there was an increase in reticulocytes which reached a peak on the third day after the injection of serum from the anaemic animals. It is concluded that these experiments suggest the presence of an erythropoietic substance in the serum of anaemic animals.—R. Allcroft.

VENN, J. A. J. (1944). **Variations in the leucocyte count of the pig during the first twelve weeks of life.**—*J. comp. Path.* **54.** 172–178. **798**

Samples were taken from each individual pig in two separate litters at approximately weekly intervals from birth to 12 weeks of age. A total and a differential count and a Schilling haemogram were made from each sample and values averaged for each separate litter. A description of the cell types encountered, as seen by using Leishman's stain, is given. The results from the two litters were in general conformity. The lymphocyte count increased gradually for the first six weeks to an approximate average of 8,000 cells per cu.mm. After a preliminary fall, the neutrophile count rose to a maximum of about 10,000 cells per cu.mm. after ten weeks and then fell again; there was also a temporary fall at six weeks following weaning.—R. A. ROPER.

MORRIS, P. G. D. (1944). **Blood picture of a cow during a normal pregnancy and parturition.**—*Vet. J.* **100.** 225–233. **799**

An account is given of the variations in the red and white blood cell counts, the haemoglobin values, and the colour index in one cow, the readings being taken weekly. The r.b.c. showed a slightly lower count towards the end of pregnancy and there was a sudden temporary fall immediately after parturition. The latter fall was accompanied by a similar fall in the haemoglobin percentage and the colour index was also low. A leucocytosis occurred both during the "drying-off" period from the previous lactation and in the two weeks prior to parturition; this was mainly due to increased numbers of neutrophiles, although in the former instance eosinophiles also increased. A non-specific skin disease similarly increased the eosinophile count. Lymphocytes and monocytes showed little alteration apart from a decrease in the latter while the cow was "dried off".—R. A. ROPER.

BAYLOR, M. R. B., NALBANDOV, A., & CLARK, G. L. (1943). **Electron microscope study of sperm.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 229–232. **800**

The entire range of magnification of the electron microscope (1,000–100,000) was used in this study. When fresh, unstained, and unfixed samples of spermatozoa from many known fertile bulls were studied under the electron microscope, it was seen that the anterior portion of the sperm head was always enveloped by a protoplasmic cap, which appeared damaged or disappeared altogether if the spermatozoa were fixed or stained. This suggested that, contrary to results obtained with the optical microscope, the protoplasmic cap is not a sign of immature or abnormal sperm but is typical of normal sperm when these are examined without being exposed to solvents used in the staining process. In stained preparations, the head appeared to have two distinct zones of density. Apart from these zones, the internal structure of the head appeared to be homogeneous and none of the stains used showed any structures or regions of density which might suggest accumulation of chromosomes in either diffuse or condensed state. In no case even when the sperm was stained with silver to demonstrate lipoidal material, was a structure observed that could be recognized as the acrosome. The tail appeared to be connected with the head by means of two or more threadlike structures which became apparent when the tail broke away from the head. The middle piece was uniformly dense and no mitochondria were demonstrable. The tail ended in a brush consisting of many free and very long filaments. Breaks in the main or end-pieces of the tail also showed flared brushes which suggest that the axial filament consists of a bundle of fine fibres rather than of a single relatively thick thread.

The various appearances referred to are shown in a series of photographs.—N. J. SCORGIE.

ALMQUIST, J. O. & ANDREWS, F. N. (1944). **The failure of ascorbic acid to augment equine gonadotropin in the rat.**—*J. Anim. Sci.* **3.** 183–187. **801**

In view of the conflicting reports in the literature concerning the synergistic effect of ascorbic acid upon gonadotropin in rats, the authors made a number of comparative studies upon rats, both male and female, at 24 and 70 days old. Employing the criterion of increased weight of testes, ovaries, and uterus, the authors report that there were no significant differences in weights of the reproductive organs between those rats injected with 25 R.U. of pregnant mare serum gonadotropin supplemented with 50 mg. ascorbic acid and those receiving the same amount of hormone alone.—A. EDEN.

FALKINER, G. B. S., KELLEY, R. B., GRANGER, W., & GUNN, R. M. C. (1942). **Artificial insemination of Australian merino sheep.** pp. 52. Sydney: Australasian Medical Publishing Company Limited. [8vo]. **802**

FALKINER describes the steps taken to determine the possible value and practicability of artificial insemination in improving the average fleece weight cut from Australian merino sheep (8 lb.). KELLEY, in discussing the genetical aspects of artificial insemination, warns of the danger of its indiscriminate use, particularly within closed studs. "It is a means and not an end in itself and is properly associated most intimately with inbreeding, selective mating, whether of likes or unlikes, and other tools of trade with which the animal breeder works". GRANGER describes preliminary trials at Haddon Rig merino stud. Details are given of the crush used for insemination, of the vaginal speculum (designed by GUNN), and of insemination syringes. The proportion of ewes conceiving to artificial insemination with 0·1 ml. semen directly after collection from rams by means of an artificial vagina, was found to be comparable with that obtained (54–63%) under "hand-mating" conditions, oestrus being detected by the use of a vasectomized ram. It is considered that artificial insemination is practicable under good "hand-mating" conditions when performed by, or under direction of a skilled person. GUNN points out that cost is the main limiting factor in the extensive use of artificial insemination amongst flock sheep (4s. per lamb when inseminating a flock of 2,000 ewes as against 6d. per lamb paddock mating). With stud sheep where cost is unimportant, its value for progeny testing in young rams and for the wider use of proven sires is considered to be great.—C. S. SAPSFORD (AUSTRALIA).

HUNT, A. H. (1941). **The role of vitamin C in wound healing.**—*Brit. J. Surg.* **28.** 436–461. **803**

The healing of experimental wounds in g. pigs kept on a diet partially deficient in vitamin C is profoundly disturbed. Collagen does not form, and the intercellular substance remains immature and of poor holding power. The proliferating mesodermal cells also fail to mature. The collagen of normally healed wounds reverts to precollagen if scurvy supervenes. In eight out of 28 human cases studied P.M., the wounds showed a deficiency in the formation of collagen resembling that in the sub-scorbutic g. pigs. In these eight cases there were five instances of abdominal disruption and three of leakage at gastro-intestinal suture lines.—J. M. ROBSON.

BLUM, G. (1944). **Phosphatase and the repair of fractures.**—*Lancet.* **247.** 75–78. **804**

The effects are described of various synthetic plastics on phosphatase activity *in vitro*: of those

studied only phenolformaldehyde completely abolished the activity of the enzyme, although cellulose acetate had considerable inhibitory effect.

Experimental bone-gaps were produced in rabbits and the effect of phosphatase upon the rate of repair was studied. Phosphatase with glycerophosphate in an anchoring medium of sodium alginate accelerated repair of experimental fractures.

Ectopic bone formation in muscle was reported following the injection of phosphatase with a suitable substrate and anchoring medium. Further work on these lines is in progress.—A. EDEN.

CASPE, S. (1944). **The role of creatine in cell growth in vitro and its use in wound healing.**—*J. Lab. clin. Med.* **29.** 483–485. **805**

Creatine (100–800 mg. per 100 ml. of Tyrode's solution) increased the growth of a variety of tissues *in vitro*. Further experiments are in progress.
—J. M. ROBSON.

OTTAWAY, C. W. (1944). **The anatomical closure of the foramen ovale in the equine and bovine heart: a comparative study with observations on the foetal and adult states—I & II.**—*Vet. J.* **100.** 111–118 and 130–134. **806**

This is part of a thesis based on dissection of a series of hearts of cattle, horses, pigs, cats, and dogs of ages varying from three-quarters of full term to well into adult life. The article deals almost entirely with the equine and bovine species.

The tubular character of the valve of the foramen ovale in the horse and ox is stressed and the method of closure is described in detail. A closed foramen in the horse was seen at 15 days after birth and in the bovine animal at 20 days. The dilated membranous tube which forms the valve is fenestrated at its apex: functional closure after birth is assisted by impingement of the bloodstream, being mainly confined to the non-fenestrated portion and thus allowing organization of the fenestrated part. The term "atrial ridge" is applied to that part of the valve on which the greatest flow of pulmonary flow impinges.

The tubercle of Lower differs in orientation and form in the horse and ox, the free edge of the tubercle being nearer the crista dividens in the latter species. This difference may possibly be related to the large coronary inflow in the bovine animal.

There are eight photographs of dissected hearts, labelled to indicate clearly the features discussed in the text.—E. G. WHITE.

*DOBI, E. (1942). **[Structure of the lungs in fowls and ducks].**—*Inaug. Diss., Budapest.* pp. 25. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 514]. **807**

The extra-pleural lung of the fowl is flattened dorso-ventrally; that of the duck is broad and thick and is flattened laterally. The mucous membrane of the main bronchus and mesobronchus is a striated cylindrical epithelium and contains in the duck numerous goblet cells. The subepithelial lamina propria is well supplied with lymphatics in the duck and with gland cells in the hen; beneath the lamina is muscular tissue and cartilaginous rings. Within the lung the bronchi are divided by disc-like protuberances. Air canals (bronchioles) arise from the bronchi; they are lines with respiratory epithelial cells and are in intimate association with the blood capillaries. The mass of lung tissue consists of collagen and elastic fibre with layers of smooth muscle.
—C. W. OTTAWAY.

*ZIMMERMANN, A. (1942). **[Comparative anatomy of the Gasserian ganglion].**—*Állatorv. Közl.* **38.** 142–149. [In Hungarian]. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 515]. **808**

In most of the domestic animals the Gasserian (semi-lunar) ganglion is situated within the dura mater. In the fowl it is in two portions; the nervus maxillaris and n. mandibularis arise from the larger portion and the n. ophthalmicus from the smaller. Ganglion cells are arranged in rows corresponding with the three roots. No evidence of an accessory ganglion was found. Sizes in the common domestic animals are given.—C. W. O.

HOUSE, E. L. (1943). **The development of the hypophysis of the ox.**—*Amer. J. Anat.* **73.** 1–25. **809**

The early development of the various parts of the pituitary body in the calf are described, together with the conditions which determine the differentiation of the acidophile cells in the pars intermedia (Wulzen's lobe). Rathke's pocket is shown to be formed as a folding of the ectoderm of the area as a result of a complex of growth changes involving the ventral bending and expansion of the forebrain and a characteristic spread of the associated mesoderm. Thus the oft-quoted statement that the epithelial hypophysis arises as an active evagination of the stomodaeum which fuses secondarily with an evagination of the brain, is not strictly correct.—H. V. HUGHES.

*TOTH, E. (1942). **[Comparative histology of the pituitary body].**—*Inaug. Diss., Budapest.* pp. 31. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 515]. **810**

The pituitary of the ox is round or oval and surrounded by a plexus of blood vessels; that of the sheep is more elongated and, relative to body weight, smaller. The three parts are very distinct; the pars anterior of the sheep is ventral in position. The pars anterior contains many cells and is surrounded by thick connective tissue.—C. W. OTTAWAY.

See also absts. **783** (artificial insemination), **847** (anoestrus in cattle), **779** (frigidity in rabbits), **752** (sex hormones and neoplasms), **686** (action of vitamin K).

POISONS AND POISONING

SEIGNEURIN, R., & RENOUX, G. (1943). Le mécanisme physico-chimique de l'action oligodynamique du mercure. **[Physico-chemical mechanism of the oligodynamic action of mercury].**—*Ann. Inst. Pasteur.* **69.** 171–178. **811**

Experiments are described which support the view that metallic mercury exerts its toxic action by the formation of ionic mercuric oxide. This is comparatively unstable and its formation is dependent on the presence of water and oxygen. Metallic mercury and its vapour are, as such, not toxic.—J. M. ROBSON.

COGHLIN, C. L. (1944). **Hydrogen sulphide poisoning in cattle.**—*Canad. J. comp. Med.* **8.** 111–113. **812**

Thirty pounds of sulphur were mixed with the food, which included silage, of 63 cattle, the owner believing that it would cure louse infestation and ringworm. The majority of the herd developed symptoms of hydrogen sulphide poisoning and several died. Appropriate treatment was ineffective once symptoms had developed.—P. J. G. PLUMMER (CANADA).

*HOFFMAN, E. (1943). Nytt fall av zinkforgiftning hos nöt til föjld av svetsningsarbete i ladusgård. **[Zinc poisoning in cattle].**—*Skand. VetTidskr.* **33.** 84. [Abst. from abst. in *Norsk VetTidsskr.* **55.** 181 & 182]. **813**

Welding of galvanized iron bars by the acetylene

lame was carried out for two days in a badly ventilated byre. Subsequently a pregnant cow became dyspnoeic and died and seven others became ill but recovered. P.M. examination of the dead cow revealed interstitial pulmonary emphysema and atelectasis. From experience of similar cases, it is concluded that zinc oxide fumes were the cause.—J. E.

Sugg, R. S., Simms, B. T., & Baker, K. G. (1944). **Studies of toxicity of wild winter peas (Lathyrus hirsutus) for cattle.**—*Vet. Med.* **39.** 308–311. **814**

In the late spring of 1941, 1942, and 1943 a peculiar lameness developed in cattle over six months of age grazed on pastures containing *L. hirsutus* on several farms in Alabama. In a test of toxicity, a 12-month-old heifer was fed only on green flowering and pod-bearing plants of *L. hirsutus*. On the fifth day the animal was slightly lame in one leg. By the next day it was lame on all four legs, and spent most of the time lying down; after seven days, however, gradual improvement took place, although feeding was continued up to the 15th day.

Six steers were grazed on *L. hirsutus* pasture for more than five months, but did not develop symptoms until the plants commenced to flower and form seed pods. At this stage, a second group of six steers was turned into the field and all developed lameness. As the plants matured, the affected cattle improved, and all made complete recoveries while still on the pasture.

Two further groups of calves were fed for a month on hay made from the flowering and seeding plants, but showed no abnormalities.—J. O. L. King.

Derflinger, E. R. (1944). **Fern allergy (Pteridium aquilinum) (Pteridium latiusculum).**—*Fort Dodge Biochem. Rev.* **15.** No. 2. 3–5. **815**

Cattle with bracken poisoning show lassitude, haemorrhage from the nose, clots or masses of blood in the faeces, and a temperature of 105°–109°F. Death may occur within a week. Poisoned horses may show incoordinated movements, jaundice, and subnormal temperature. Affected animals should be kept in the dark and given magnesia. It is suggested that vitamin K may be effective, presumably in reducing the haemorrhage of the alimentary tract.—E. Boyland.

Haag, H. B., Taliaferro, I., & Goodhue, L. D. (1943). **Toxicity of extracts of derris root for mice.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 140–141. **816**

Toxicity studies on mice, in which a sample of finely ground derris root was used containing 4·6% rotenone and 14·0% total chloroform extractives, indicated that the toxicity is due to the insecticidally active materials represented by the rotenone content, total chloroform extractives, and red colour index. The results did not, however, indicate the relative toxicity of the various fractions. The materials not extracted with chloroform were non-toxic to mice.

—R. Allcroft.

Welch, H., Grove, D. C., Davis, R. P., & Hunter, A. C. (1944). **The relative toxicity of six salts of penicillin.**—*Proc. Soc. exp. Biol., N.Y.* **55.** 246–248. **817**

The toxicity of salts of penicillin increases in the order sodium, ammonium, strontium, calcium, magnesium and potassium. The same relative toxicity was found in the acetates of these metals, and it is concluded that the toxicity of penicillin is mainly due to the cations used in preparation of the salts.—E. Boyland.

Kracke, R. R. (1944). **The effects of sulfonamide drugs on the blood.**—*Amer. J. clin. Path.* **14.** 191–199. **818**

The mechanism of cyanosis from sulphanilamide is unknown, but evidence indicates that methaemoglobin is partly responsible, plus actual staining of the blood cells by the purple oxidized drug. Sulphonamides are capable of producing serious degrees of acute haemolytic anaemia, and there is evidence that all patients suffer from accelerated destruction of red cells. The drugs occasionally cause agranulocytosis, of which the prognosis is serious. They can also lower the count of blood platelets with resulting haemorrhagic manifestations. Occasionally, a patient may develop a leucaemoid reaction, and a large number of leucaemics seen in recent years by K. give a history of previous sulphonamide administration. It is suggested that sulphonamides should be administered only under the close supervision of a physician and that the blood condition of the patient should always be followed.—J. M. Robson.

Schrek, R. (1943). **Measurement of toxicity of antiseptics by the method of unstained cell counts.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 283–285. **819**

In this method, eosin solution was added to suspensions derived from rabbit thymus and bone marrow before and after incubation with various dilutions of the antiseptics tested, and counts of stained, unstained, and red blood cells were made in a haemocytometer. Sodium sulphathiazole was found to be the least toxic, and mercuric chloride the most toxic of the antiseptics tested. Tinctures of merthiolate and zephiran chloride were more toxic than the corresponding aqueous solutions; in the case of metaphen the solution and the tincture were equal in toxicity. All the antiseptics tested were less toxic to the polymorphonuclear leucocyte than to the lymphocyte.—R. A.

Koschnick. (1943). Gelbkreuz-(Lost-)vergiftungen bei Pferden. **[Mustard gas poisoning in horses].**—*Z. Veterinärk.* **55.** 57–63. **820**

Hay carried in a military waggon became contaminated with mustard gas and caused severe burns in about one-third of the animals in a column of 80 German army horses. Symptoms included profuse salivation, conjunctivitis, rapid pulse and respiration, nasal discharge, and refusal to eat. Most of the affected animals died or were killed. The lesions found included severe burns of the buccal mucosa (especially the lips and tongue), necrosis and ulceration of the oesophagus and stomach, and a friable and haemorrhagic condition of the myocardium. These findings were in two animals examined P.M. from among seven under K.'s care: the other animals had travelled further on with the column and it was reported that some 20 were affected, most of them with fatal results. It was at first thought that the condition was contagious pustular dermatitis, but attempts to transmit the condition to other horses and to cattle failed and further search revealed a canister of mustard gas which had been carried in the waggon. Several civilians who had handled the canister previously, thinking the contents were lubricating oil, were severely affected.—E. G. White.

See also absts. **846** (selenium), **845** (cyanide).

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION

Van Loon, E. J., & Clark, B. B. (1944). **Observations on the hematologic actions of acetanilid and acetophenetidin in the dog.**—*J. Lab. clin. Med.* **29.** 942–956]. [Authors' summary copied *verbatim*]. **821**

1. The hematological effects of a wide range of dosages of acetanilid and acetophenetidin on the peripheral blood and bone marrow of dogs are described.
2. The chronic administration of acetanilid up to

36 mg. per kilogram per day caused little or no abnormal hematological changes in dogs.

3. Large doses of acetanilid produce a hemolytic anemia with no evidence of depression of bone marrow. Recovery is rapid and apparently complete on cessation of administration of the drug.

4. The daily administration of acetophenetidin produces the same qualitative effects, but quantitatively the drug is less active than acetanilid.

5. Both drugs produce a temporary methemoglobinemia when certain threshold doses are exceeded. However, in the dosage range employed, no cumulation of methemoglobin was observed with repeated daily administration.

6. The possible mechanisms of the hematological actions are discussed.

WILKINS, W. H., & HARRIS, G. C. M. (1944). **Investigation into the production of bacteriostatic substances by fungi. Preliminary examination of a fourth 100 species, all penicillia.**—*Brit. J. exp. Path.* **25.** 135–137. 822

A total of 1,130 species of fungi have now been tested against *Bacterium coli*, *Staphylococcus aureus* and *Pseudomonas pyocyanea*. No members of the Phycomycetes or Ascomycetes groups were found to possess inhibitory activity, but 10% of Basidiomycetes, 20% of penicillia, and 30% of aspergilli were strongly positive.—E. BOYLAND.

I. GAUSE, G. F., & BRAZHNIKOVA, M. G. (1944). **Gramicidin S. Origin and mode of action.**—*Lancet.* **247.** 715–716. 823

II. BELOZERSKY, A. N., & PASSHINA, T. S. (1944). **Chemistry of gramicidin S.**—*Ibid.* 716–717. 824

III. SERGIEV, P. G. (1944). **Clinical Use of Gramicidin S.**—*Ibid.* 717–718. 825

I–III. The authors have studied the antibiotic action of aerobic sporulating bacilli and have found one, designated as the Gause-Brazhnikova strain, to be especially effective. It produces a hitherto unknown polypeptide with a melting point 268–270°C. Chemical investigations have shown that it differs from both gramicidin and tyrocidine hydrochloride. The new substance has been named "Soviet gramicidin" or "gramicidin S". It kills not only Gram-positive but also Gram-negative bacteria suspended in nutritive broth. Its toxicity is no greater than that of tyrothricin, and it is harmless when applied locally in concentrations of 400–800 μg. per ml. Gramicidin S is stable and its antibacterial activity is not destroyed by autoclaving. It has been shown to protect against anaerobic infection with *Clostridium welchii* in g. pigs and rats.

Clinical results in 1,500 cases are reported. The drug was distributed in ampoules containing 4% alcoholic solution, which was then diluted to make suspensions or ointments. It is said to have the power of alleviating pain, a feature not recorded with tyrothricin. Good results are claimed in the treatment of suppuration of soft tissues, even of long standing, and in the preparation of areas for skin grafting. Examples are given of good effects in osteomyelitis. Valuable effects are also described in the treatment of skin infections, especially impetigo.—J. M. ROBSON.

ROBINSON, H. J., & SMITH, D. G. (1944). **Streptothricin as a chemotherapeutic agent.**—*J. Pharmacol.* **81.** 390–401. 826

Streptothricin is a stable substance, produced by *Actinomycetes lavendulai*, which is active against Gram-negative and, to a lesser extent, against Gram-positive organisms, both *in vivo* and *in vitro*. It is not effective in treating influenza virus or *Trypanosoma equiperdum* infections. Although it is not destroyed in the stomach and is absorbed from the gut, it is generally more effective by parenteral than by oral administration. Streptothricin may be given orally in the treatment of dysentery, typhoid or salmonella food poisoning in human beings, or applied directly in the treatment of infected wounds and burns.—E. BOYLAND.

HOBBY, G. L., & DAWSON, M. H. (1944). **Effect of rate of growth of bacteria on action of penicillin.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 181–184. 827

Conditions which increase the rate of growth of streptococci (*e.g.* addition of blood or *p*-aminobenzoic acid and dextrose) increase the rate at which penicillin destroys the organisms. If the rate of growth is reduced (by the addition of saline or sulphadiazine), the rate of penicillin action is slowed. Suspensions of washed bacteria are destroyed more rapidly than suspensions of unwashed organisms, presumably because the unwashed streptococci contain some penicillin antagonist.—E. BOYLAND.

HOBBY, G. L., & DAWSON, M. H. (1944). **Relationship of penicillin to sulfonamide action.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 184–187. 828

The authors could not demonstrate any synergistic action between sulphapyridine or sulphadiazine and penicillin on the inhibition of growth of staphylococci and streptococci. The effect of penicillin was accelerated by the addition of *p*-aminobenzoic acid to the media. —E. BOYLAND.

SOO-HOO, G., & SCHNITZER, R. J. (1944). **The activity of penicillin combined with other anti-streptococcal agents towards β-hemolytic streptococci in vivo.**—*Arch. Biochem.* **5.** 99–106. 829

Mice infected with streptococci were treated with subtherapeutic doses of penicillin combined with equally small doses of sulphanilamide, sulphapyridine, acriflavine, nitro-acridine, or myochrisine. The penicillin had a synergistic action with the sulphonamides but had no such action with the others. The administration of penicillin with sulphonamide and *p*-aminobenzoic acid counteracted the usual effect of *p*-aminobenzoic acid in neutralizing sulphonamide action.—E. B.

LOUGHLIN, E. H., BENNETT, R. H., FLANAGAN, M. E., & SPITZ, S. H. (1944). **Studies on the absorption of the sulfonamides from the gastrointestinal tract of albino rats.**—*J. Lab. clin. Med.* **29.** 921–935. [Authors' conclusions copied *verbatim*]. 830

1. Sulfapyridine, sodium sulfapyridine, sulfathiazole, sodium sulfathiazole, sulfadiazine, and sodium sulfadiazine seem to be absorbed from the stomachs of albino rats in significant amounts. With the exception of sulfadiazine, however, significantly greater quantities of the sulfonamides are absorbed from the gastrointestinal tracts of those animals without pyloric occlusion.

2. Conjugation of the sulfonamides in albino rats occurs as early as one minute after administration by gavage.

KUMLER, W. D., & DANIELS, T. C. (1943). **Relation between chemical structure and bacteriostatic activity of sulphanilamide type compounds.**—*J. Amer. chem. Soc.* **65.** 2190–2196. 831

A fundamental factor for the activity of compounds of the sulphanilamide type appears to be the contribution of the resonating form with a coplanar amino group. The negative character of the SO_2 group is a concomitant factor associated with this resonating form. The activity of compounds which appear to be exceptions to BELL & ROBLIN'S theory (according to which the activity is correlated with the negative character of the SO_2 group and with the acid dissociation constants)

uch as sulphanilylurea, sulphanilylguanidine, or com-ounds which do not fall within the scope of their heory, *e.g.* sulphones, can be adequately accounted for n the basis of this resonance theory. These ideas also ay apply to other bacteriostatic compounds, including he mono-amino acridines.—J. M. Robson.

McLeod, J. W., Mayr-Harting, A., & Walker, N. (1944). **The influence of access of free oxygen on the action of antiseptics with special reference to the sulphonamides.**—*J. Path. Bact.* **56.** 377–389. **832**

Observations on the relative bactericidal potency of sulphonamides in the superficial and deeper layers of solid media show that bacteria sensitive to sulphonamides *in vitro* are more susceptible to the drugs in the superficial parts of the culture most penetrated by oxygen. *p*-Aminophenol, which is chemically related to sulphanilamide, undergoes spontaneous oxidation to an antiseptic substance potent for a wide range of bacteria. It also shows a greatly increased potency in the superficial layers of deep cultures in solid media. A similar phenomenon was observed with proflavine, but not with iodine. These results support the suggestion that oxidation of sulphonamides is an essential step in the development of their chemotherapeutic action.—J. M. Robson.

Park, R. G. (1944). **Sulphonamide allergy. The persistence of desensitization.**—*Brit. med. J.* Dec. 23rd. 816–817. **833**

Desensitization to sulphonamides has been a consistent success by the following method. An initial amount too small to cause a reaction, given by the mouth in four or five divided doses per day, is doubled each day until a mild reaction appears. It is then kept the same until symptoms have subsided, when it is again increased. A patient so desensitized was re-investigated one year later: the allergy had returned to only a fraction of its former level.—J. M. Robson.

Boroff, D. A. (1944). **Relation of antisulfonamide action of serum to resistance to sulfonamide therapy.**—*Bull. U.S. Army med. Dep.* No. 78. 111–113. **834**

It has been previously shown that the serum of certain individuals antagonizes the action of sulphonamides, when tested *in vitro*. Evidence is now presented which suggests that the serum of gonorrhoeal patients who are resistant to sulphonamide treatment, has a much greater anti-sulphonamide action than that of patients who react normally to sulphonamides. Potentially resistant patients may be diagnosed by this method and some other form of therapy applied.—J. M. R.

Pinck, B. D., Morton, G. L., & Mattice, M. R. (1944). **Effect of certain salts on activity of sulfacetamide.**—*J. Lab. clin. Med.* **29.** 462–463. [Authors' summary copied *verbatim*]. **835**

The presence of sodium citrate (4 per cent strength) in a medium containing sulfacetamide nullifies the antibacterial behaviour of the sulfonamide and permits unarrested development of *E. coli*. The citrate alone does not inhibit the growth of these organisms. The bacteriostatic potency of the drug is not similarly impaired by sodium acetate or sodium lactate.

Hobby, G. L., & Dawson, M. H. (1944). **Bacteriostatic action of penicillin on hemolytic streptococci *in vitro*.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 178–181. **836**

Penicillin is most effective in inhibiting bacterial growth when rapid multiplication is occurring. The retardation of growth produced by low concentrations of penicillin resembles that produced by sulphonamides, but pure penicillin is 200,000 times as effective as sulphadiazine. Organisms which are resistant to penicillin (*e.g. Bacterium coli*) were found to contain a substance which antagonizes the effect of penicillin on susceptible streptococci.—E. Boyland.

Foley, E. J., Epstein, J. A., & Lee, S. W. (1944). **Sulfathiazole-acetaldehyde sodium bisulfite in experimental group C streptococcal infections.**—*J. Immunol.* **49.** 129–140. **837**

Lesions were produced in g. pigs by injecting the organisms subcutaneously into the right flank or instilling them into the conjunctival sac of young animals. Intra-abdominal injection in the first group, or local application in the second group, of the sulphathiazole compound produced beneficial effects. Favourable effects of the drug were also observed in experimental streptococcal infections of chick embryos.—J. M. R.

Bierman, W., Shwartzman, G., & Rosenberg, S. I. (1944). **The effect of chemotherapeutic sulfa drugs upon the growth of α-hemolyticus streptococcus.**—*J. Lab. clin. Med.* **29.** 453–461. **838**

The inherent resistance to sulphonamides of a strain of an α-haemolytic streptococcus isolated from a human case of subacute endocarditis remained unchanged under both favourable and adverse conditions of cultivation *in vitro*; these included changes in pH, temperature, and the use of various types of media. —J. M. Robson.

Dharmendra, & Bose, R. (1943). **Bactericidal action *in vitro* of sulphanilamide and sulphapyridine on *Mycobacterium leprae muris*.**—*Indian J. med. Res.* **31.** 133–136. **839**

The authors studied the action *in vitro* of sulphapyridine and sulphanilamide on the rat leprosy bacillus contained in suspensions of tissues from experimentally infected rats. Sulphanilamide at 1 : 1,000 and sulphapyridine at 1 : 1,000 and 1 : 10,000 exerted a definite bactericidal effect within 48 hours at 37°C. Sulphanilamide at 1 : 10,000 was not tested at this temperature. Neither drug was bactericidal in the cold (4°C. for 96 hours).—L. Sahai (India).

Tamura, J. T. (1944). **The action of sulfonamides and of para-aminobenzoic acid on *Bacterium tularense*.**—*J. Bact.* **47.** 529–533. **840**

Sulphapyrazine at a concentration of 5 mg. % induced complete bacteriostasis of *Pasteurella tularensis* with 20 up to 20,000 organisms per ml. of culture medium. 1·37 mg. % *p*-aminobenzoic acid inhibited growth of the organism. Inhibition by sulphapyrazine was much more efficient than by sulphanilamide, neoprontosil, sulphapyridine, sulphaguanidine, sulphathiazole or sulphadiazine.—G. D. S.

Reed, G. B., Orr, J. H., & Reed, R. W. (1944). **In vitro action of sulfonamides on *Clostridia*. Sulfonamide inhibitors.**—*J. Bact.* **48.** 233–242. [Authors' summary copied *verbatim*]. **841**

1. It has been shown that sulfonamides exert an *in vitro* bacteriostatic action on all pathogenic species of *Clostridium* tested.

2. The order of effectiveness is sulfathiazole, sulfadiazine, sulfapyridine, sulfanilamide.

3. The species of *Clostridium* against which sulfonamides exert the greatest *in vitro* bacteriostatic action are those which, like *C. sordellii*, produce least inhibitor; those against which the sulfonamides exert least bacteriostatic action are those which, like *C. welchii*, produce most inhibitor.

4. This difference in sulfonamide-inhibitor production has been demonstrated in filtrates of broth cultures and in water and ammonia extracts of the organisms.

Scheng, T. D. (1943). Zur Wirkung von Arzneistoffen auf die exoerythrocytären Entwicklungsformen der Plasmodien. **[The action of drugs on the exo-erythrocytic forms of malaria parasites].**—*Arch. exp. Path. Pharmak.* **201.** 502–519. **842**

The effects of quinine, plasmochin, and atebrin on the erythrocytic (E) forms of *Plasmodium cathemerium* contained in the blood and the exo-erythrocytic (EE) forms contained in the liver pulp have been investigated *in vitro*. It was found that the EE forms in the liver pulp are more resistant than the E forms. The resistance of the EE forms does not depend on a protective effect of the liver pulp, but on the insensibility of the EE forms to therapeutic substances. It is thought that the explanation of the failure to achieve prophylaxis and to effect a successful cure of bird malaria, lies in peculiarities in the assimilation processes of the EE forms.—C. Horton Smith.

Thorp, W. T. S., Pisciotta, V. J., & Grundy, C. B. (1944). **Sulfasuxidine and sulfathalidine for infectious calf scours.**—*J. Amer. vet. med. Ass.* **104.** 274–278. **843**

Eighty-four calves clinically affected with calf scours were used to determine the value of sulphasuxidine (succinyl sulphathiazole) and sulphathalidine (phthalylsulphathiazole) in treating the condition. Both drugs were shown to be highly effective. Sulphathalidine in equal dosage was more bacteriostatic than sulphasuxidine. The following doses are recommended :– 0·25 g. sulphathalidine, and 0·5 g. sulphasuxidine per kg. body weight [? for 3–4 and 4–5 days respectively : orig. not clear]. Small calves responded well to dosages of 0·1 g. per kg. of sulphathalidine.

In toxicity studies on normal calves, it was found that 2–4 times the therapeutic doses could be safely employed. With the largest amounts there was very little increase in the blood concentration of either drug and no tissue changes occurred in the liver, spleen, or kidneys.

[Most of the sulphonamides are effective against *Bacterium coli* infections. Comparison with sulphaguanidine which is now widely advocated for calf scours will be necessary before the value of either of these drugs is established in practice.]—D. D. Ogilvie.

Cameron, D. (1944). **Rodent ulcer. Treated by application of sodium bicarbonate.**—*Lancet.* **247.** 720–722. **844**

Sixteen cases of uncomplicated rodent ulcers (verified histologically) were treated by the application of sodium bicarbonate (saturated solution, or in paste or ointment). The lesion disappeared in eight cases. The treatment does not impair the effect of radium and is not prejudiced by the previous use of radium.

—J. M. Robson.

Shearer, G. D., & Sellers, K. C. (1944). **Cyanide poisoning and its treatment.**—*Vet. J.* **100.** 92–97. **845**

After briefly discussing the occurrences of cyanide poisoning in farm animals, the authors describe experimental cyanide toxicity in rabbits and sheep and the value of sodium nitrite and sodium thiosulphate as antidotes. Based on the results of American experience, the intraperitoneal injection of 1 g. $NaNO_2$ and 2 g. $Na_2S_2O_3$ in 15 ml. water was found to be a most effective remedy for sheep. The mechanism of HCN poisoning is discussed. Cyanide is a cell rather than a blood poison and its action depends upon interference with the oxidative enzymes of the tissues, in particular cytochrome and cytochrome oxidase. The mode of action of the antidote appears to be that the Hb within the corpuscles is oxidized by nitrite to methaemoglobin which combines with cyanide to form cyanomethaemoglobin. The complex is slowly decomposed, liberating HCN which combines with the thiosulphate to form the innocuous thiocyanate.—A. Eden.

Moxon, A. L., & Wilson, W. O. (1944). **Selenium-arsenic antagonism in poultry.**—*Poult. Sci.* **23.** 149–151. **846**

Hatchability tests conducted over two seasons showed that the addition of arsenic to the drinking water of hens receiving a ration containing seleniferous wheat so as to give a concentration of 10 p.p.m. Se, prevented to some extent the reduction in hatchability of the eggs. At a level of 5 p.p.m. As was more effective in counteracting the toxicity of the Se than As at a level of 2·5 p.p.m., but neither levels gave complete protection against 10 p.p.m. Se.—R. Allcroft.

Barker, C. A. V. (1944). **Treatment of anoestrous of sows with diethystilbestrol.**—*Canad. J. comp. Med.* **8.** 11–13. **847**

A 5 mg. dose of diethylstilboestrol diproprionate failed to intensify oestrus in a sow of eight months of age. A dose of 10 mg. given subcutaneously to three sows produced oestrus in 3–7 days. From a review of the literature and from these results, it is suggested that ovulation is induced in a certain percentage of anoestrous sows by treatment with diethylstilboestrol diproprionate, that 5 mg. may be sufficient for sows which have farrowed one or more litters, that gilts may require 10 mg., that oestrus may appear in 1–7 days after treatment, that the duration of the induced oestrus is variable, and that a normal interval of 21–23 days will elapse between the induced oestrus and the first normal, non-induced oestrus, except in gilts, when the period may be shortened.—R. Gwatkin (Canada).

—. (1943). Behandlung von Phosphorverbrennungen. **[Treatment of phosphorus burns].**—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Oct. 29th. 385. **848**

The German Dermatological Society makes the following recommendations for treatment of cases of phosphorus burns. (1) Immediate removal of parts of clothing contaminated with phosphorus. If possible this should be done under water. (2) Removal of particles of phosphorus from skin by brushing with water with or without soap. If water is not available the skin should be rubbed energetically with sand. (3) If the burns are extensive the patient should be taken to hospital as quickly as possible. Water should be available during transport in case of fire.

Yellow phosphorus is used as incendiary material either in the solid form or in solution. In acute poisoning, it causes fatty degeneration of the liver.—E. B.

Jones, C. M., Bartlett, M. K., Ryan, A. E., & Drummey, G. D. (1943). **The effect of sulfanilamide powder on the healing of sterile and infected wounds.**—*New Engl. J. Med.* **229.** 642–646. **849**

The use of sulphanilamide in healing wounds in g. pigs did not reduce the tensile strength of the scar. The presence of focal infection distant from the healing scar did not alter its ascorbic acid content or tensile strength. Local wound sepsis; however, reduced tensile strength and interfered with normal healing. This was particularly marked in scorbutic animals, but also occurred when local sulphanilamide therapy was not completely effective in preventing sepsis.—J. M. R.

Jordan, R. C., & Jacobs, S. E. (1944). **Studies in the dynamics of disinfection. I. New data on the reaction between phenol and *Bact. coli.* using an improved technique, together with an analysis of the distribution of resistance amongst the cells of**

the bacterial populations studied.—*J. Hyg., Camb.* **43.** 275–289. **850**

Experiments were carried out on the lethal action of phenol under standardized conditions in which phenol solutions were added to large volumes of culture. Except when the mortality exceeded 95% close agreement between duplicate observations was obtained. The logarithm of the number of survivors plotted against time did not give a straight line but indicated that the lethal action had three phases—(1) a slow but increasing death rate, (2) a constant maximum rate, and (3) a slower rate at the end of the action. Increase in phenol concentration (from 0·35–0·8%) had most effect in shortening phase (1). The distribution of resistance of *Bact. coli* was normal when the resistance was measured in terms of logarithm of the survival time, except for the times necessary to kill less than 20% of organisms.—E. Boyland.

Baker, A. H., & Twort, C. C. (1944). **Germicidal mists and vapours in air disinfection.**—*J. Hyg., Camb.* **43.** 382–394. [Authors' conclusions copied *verbatim*]. **851**

1. In air disinfection, while actual collision between germicide and bacterial particle may be of rare occurrence it is, nevertheless, necessary when using the higher phenols in small amounts to disperse them as particles (droplets) in order to obtain a demonstrable bactericidal effect within a reasonable time.

2. When the vapour pressure of the germicide is high, decay of small particles is rapid, and we have been unable to observe that mode of dispersion results in any difference in degree of activity.

3. We have so far obtained no evidence of a specificity of lethal effectiveness of germicides in the air to the several test organisms used. If the potency in the air of ordinary phenol is taken as 1 that of the propylene glycol is about 1 while that of some of the higher phenols is over 100, there being little parallelism between the test-tube and air phenol coefficient.

4. Among some inorganic materials tested, mercuric chloride was actively bactericidal on air-borne bacteria, while non-volatile materials such as copper sulphate and boric acid had no definite demonstrable effect.

5. Surface evaporation of higher phenols at room and other relatively low temperature from large areas showed that rate and durability of kill of the test organisms was a function of volatility, as had previously been shown when utilizing smaller surfaces and a higher temperature or by mechanical atomization.

6. Rapidity of action and durability of action appear to be incompatible. Thus, a large quantity of a germicide with a high vapour pressure kills rapidly, but a small quantity will have no appreciable effect, even in unlimited time. On the other hand, a large quantity of a germicide with a low vapour pressure, while taking longer to kill, will have a more durable action, and actually will act in a much smaller quantity.

7. The efficiency of an aerial disinfectant is gauged by the amount required to give a 95% kill of the test organism within 10 min. (actually the 5th to the 8th minute). As regards removal of living organisms, this is approximately equivalent to 21–22 air turn-overs per hour. The question of loss of virulence of the 5% survivors has not, meanwhile, been satisfactorily answered from either the disinfection or ventilation angle.

Jennings, B. H., & Bigg, E. (1944). **Engineering problems in the use of glycol vapors for air sterilization.**—*Amer. J. publ. Hlth.* **34.** 477–483. **852**

It has previously been shown that low concentrations of triethylene glycol or propylene glycol will kill bacteria in air. The present study is concerned with the application of these results to large occupied spaces. Methods are described for vaporizing the glycol either by atomizing or by boiling an aqueous solution, and installations are suggested by which effective concentrations of glycol may be maintained. Some means of air agitation is considered desirable. It is pointed out, however, that no conclusions can yet be drawn as to whether bactericidal concentrations of glycol in the air will significantly affect the incidence of cross-infections of air-borne disease.—J. M. Robson.

Schneiter, R., Hollaender, A., Caminita, B. H., Kolb, R. W., Fraser, H. F., DuBuy, H. G., Neal, R. A., & Rosenblum, H. B. (1944). **Effectiveness of ultraviolet irradiation of upper air for the control of bacterial air contamination in sleeping quarters. Preliminary report.**—*Amer. J. Hyg.* **40.** 136–153. **853**

The authors report the physical, bacteriological, and epidemiological findings of studies conducted in a boys' school. For the purpose of the investigation, two units were selected: in one the dormitories were equipped with a source of ultra-violet light which operated on the upper air stratum, whilst the other served as a control. The trial lasted for six months.

Nasal swabs were taken periodically, whilst air samples were collected and plated, the Wells' air centrifuge and a special sampler being used; the latter is described in detail. Some reduction in air-borne bacteria was effected. The importance of controlling dust infection is stressed. The predominant organisms found in the various samples were staphylococci. No significant difference in hospital admission in the two groups of boys was detected, from which it is concluded that spread of infection is not related solely to the bacterial flora of the air.—R. E. Glover.

See also absts. **817** (penicillin), **818** (sulphonamides), **816** (derris), **791** (treatment of bovine acetonaemia), **904** (of avian coccidiosis), **819** (antiseptics).

HYGIENE AND PUBLIC HEALTH

Hüsgen. (1943). Naeringsmiddelkontrollen i Tyskland med saerlig henblikk på de veterinaere sakkyndiges oppgaver. [**Food control in Germany**].—*Norsk Vet-Tidsskr.* **55.** 50–58 & 77–84. **854**

A lecture for instructional purposes for Norwegian veterinarians on the scope of the German long-established food inspection service.—J. E.

Wundram, G. (1943). Tierärztl. Lebensmittelüberwachung und Gemeinschaftsverpflegung. [**Veterinary food inspection in connexion with large-scale catering**].—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 286–289. **855**

W. relates his experiences in food inspection work as applied to large restaurants and catering establishments in the Berlin district. He deals with arrangements made for feeding 5,000 persons during the Olympic Games in 1936, and for feeding large numbers of foreign workers in Germany during the present war, with special reference to the measures taken to prevent food-borne diseases.

The routine arrangements for food inspection have worked very well, as outbreaks of disease have been very few. A few outbreaks of food poisoning have been due mostly to food cooked and transported in "thermophores" which, it was shown, may if im-

properly used and if the food materials are infected, act as incubators. *Bacillus mesentericus*, various cocci, *Bacterium coli* and anaerobes, in that order, are the common contaminants. Orthodox regulations to prevent food poisoning in this way are outlined.—J. E.

HAINES, R. B., & ELLIOT, E. M. L. (1944). **Some bacteriological aspects of dehydrated foods.**—*J. Hyg., Camb.* **43.** 370–381. [Authors' summary copied *verbatim*]. **856**

1. Data on the maximum temperatures of growth of certain organisms, on the rate of toxin production by *Cl. botulinum* and the rate of multiplication of certain salmonellas, is given, as a basis on which to define the time and temperature of dehydration in the preparation of dehydrated foods.

2. It is concluded that 50°C. is the minimum temperature below which dehydration should not be carried out. Where some heating below this temperature is unavoidable, the period of such heating should not exceed 4 hr.

3. Data on the microbial changes in dehydrated foods equilibrated at various humidities indicate that bacterial growth is not expected below about 15% water content. Some experiments on the death of bacteria at water levels below this are discussed.

4. Details are given of the general bacteriological examination of the process of dehydration on a commercial scale for dried soup, dried minced beef, dried carrot, cabbage and potato.

JENNINGS, J. R. (1942). **A milk-borne epidemic of brucellosis.**—*J. Milk Technol.* **5.** 339–341. **857**

In an outbreak of undulant fever in Marcus, Iowa, 77 cases were diagnosed. Four dairies were supplying the town with unpasteurized milk. One dairy was suspected as the source of the infection, but all four were required to have their milk pasteurized and their herds tested for brucellosis. Three of the herds were found to be free from infection, but in the fourth, three animals out of 44 reacted; in these premises 24 pigs were running in the cow yard and half of these harboured the infection. *Br. suis* was obtained from the milk, from the blood of the affected persons, and from the animals involved.

J. emphasizes the advantages of pasteurization for the elimination of milk-borne infection.—H. E. B.

COOPER, K. E. (1944). **Substitution of specimens of faeces for bacteriological examination.**—*Mon. Bull. Min. Hlth emerg. publ. Hlth Lab. Serv.* **3.** 121. **858**

In tracing infection of human beings in an outbreak of Sohne dysentery, it was found that faecal samples collected by one family from the members of the household, were not, as represented, samples from each member, but that substitution had taken place. The male parent was a dairy farmer and members of the family handled the milk. An order had been enforced that the milk from the farm had to be pasteurized until the family was free from the infection.

The authors say, "This type of incident is we think an added argument for the compulsory heat treatment of all raw milk".

SKAR, O. (1943). Forslag om utvidet veterinaer kontroll med hvalkjott. [**Proposed veterinary control of whale meat**].—*Norsk VetTidsskr.* **55.** 65–77. **859**

Hitherto whale meat has only been inspected casually in Norway when offered for sale at places equipped for food inspection, but, in view of the increased capture of whales off the coast of Norway, S. states the need for more effective control.

Whaling, on a small scale, as compared with the resources and size of catch of the Antarctic whaling industry, is carried out along the entire west coast of Norway, but particularly in the area of the Lofoten islands and Bodo on the mainland. The flensing etc. is mostly done ashore. The prime necessity is rapid cooling, otherwise the flesh is liable to decompose and be useless.

The essence of effective supervisory control is observance of rapid cooling followed by dismemberment on perfectly clean flensing boards and the rapid deposition of the flesh into transport boxes with ice; some flesh, however, is preserved by salting and smoking.

Instructions compiled by the Board of Trade for the preparation and traffic in whale flesh are given: they refer only to general hygienic matters and do not include scientific inspection. Some additional instructions are suggested.—J. E.

RUBENSTEIN, A. D., FREMSTER, R. F., & SMITH, H. M. (1944). **Salmonellosis as a public health problem in wartime.**—*Amer. J. publ. Hlth.* **34.** 841–853. **860**

A detailed survey since 1937 is given of salmonellosis in Massachusetts. *S. typhi-murium*, *S. newport*, *S. paratyphi* B, and *S. oranienburg* accounted for 70% of sporadic cases. Sixteen people affected with *S. paratyphi* B, *S. oranienburg*, *S. paratyphi* A, or *S. derby* were found to be permanent carriers. In the authors' opinion, persistent convalescent carriers, and subclinical and unrecognized cases are more important sources of infection than permanent carriers and may be more important than infected animals and birds.

The authors give a short review dealing with the public health aspect of infected animals and birds. They point out that with the variety of potential hosts of salmonella infections among animals and birds there are difficulties in controlling this disease in man.

S. senftenberg was isolated from a commercial egg preparation during the period under review.—A. B.

PATERSON, J. J. (1942). **The Maidenhead food poisoning.**—*Med. Offr.* **68.** 157–158. **861**

A fairly extensive outbreak of gastro-enteritis (including one death) due to *Salmonella typhi-murium* was caused by the ingestion of pressed pork, prepared from three pigs slaughtered on account of illness. The sanitary inspector who examined the carcasses found them to be in poor condition but otherwise healthy and passed them for manufacturing purposes. Specimens taken from persons likely to have contaminated the meat and also from live pigs and fowls were negative. The possibility of contamination by rats was considered unlikely [contamination by mice apparently not investigated]. The organisms were recovered from the faeces of patients and from fragments of the pressed pork which had been buried by a householder and subsequently disinterred, presumably by a dog or cat.

Infection appears to have been unevenly distributed through the bulk of the meat, but portions eaten during preparation caused illness amongst the workers. The pork was soaked overnight in brine and then cooked for two hours and it is assumed that the salmonella survived in the centre of the larger joints.—H. E. B.

RAUSS, K. (1943). Massenfleischvergiftung durch den Stamm S. abony. [**Meat poisoning due to** *Salmonella abony*].—*Zbl. Bakt. I.* (*Orig.*). **150.** 232–235. **862**

Of some hundred people near Budapest who had consumed a certain batch of sausages, 40 became ill a few hours afterwards with severe gastro-enteritis; there were no fatalities. *S. abony* was recovered from the faeces of all the patients and also from 13 people who showed no symptoms. Agglutination tests on 20 people, made from the 14th to 18th day of illness, revealed in

[7 cases the presence of agglutinins corresponding to the α and β phases of *S. abony*. This report shows the potential pathogenicity of this organism for man.

—D. L. ROBARTS.

SANDIFORD, B. R. (1944). **Food poisoning due to *Bact. typhi-murium* (*anaerogenes*).**—*J. Path. Bact.* **56.** 254–255. **863**

S. refers to seven outbreaks of food poisoning in Egypt during the last ten years, due to anaerogenic strains of *Salmonella typhi-murium*. All outbreaks were associated with the eating of meat from sick camels and sheep, slaughtered *in extremis*. [These strains appear to resemble other anaerogenic organisms isolated by workers in Europe and America in that they possess the biochemical and antigenic properties of the salmonella species, and like *S. gallinarum*, never produce gas in carbohydrate fermentation.]

S. states that *S. typhi-murium* (*anaerogenes*) was responsible for an epizootic among g. pigs.—J. KEPPIE.

See also absts. **910** (meat), **900** (poultry carcass inspection), **874** (food-inspection reorganization in France), **877** (food-inspection training, U.S. Army), **689** (TB. control), **701**, **702** (salmonella), **746** (hydatid disease in Argentina).

TECHNIQUE AND APPARATUS

GELARIE, A. J. (1944). **Cultivation and preservation of Diplococcus pneumoniae and Mycobacterium tuberculosis in market eggs.**—*J. Lab. clin. Med.* **29.** 532–533. **864**

G. considered that the inoculation of infective material into fertilized eggs did not result in a true cultivation of the organisms concerned, but that it was really an infection of the developing embryo. On the other hand, he held that the ordinary fresh market egg was a suitable medium for the cultivation and preservation of many micro-organisms. He attempted to demonstrate this contention, using *Mycobacterium tuberculosis* and the pneumococcus. Culture material (a few drops of blood or of a broth culture) was inoculated into eggs, which were then sealed and incubated at room temperature or in an incubator at 100°F. Growth of the organisms proceeded to the same extent at room temperature as in the incubator. Examination of smears aspirated from the eggs at three-day intervals showed that the organisms were in pure culture and were spreading throughout the eggs. With pneumococci, this occurred after three days, but with tubercle bacilli multiplication did not occur until five or six days after inoculation. The virulence of the organisms was not affected in either case and with pneumococci, tested on mice and rabbits, cultures retained their virulence after repeated egg passages or after prolonged cultivation in the same egg.

[G. apparently assumes that ordinary fresh market eggs are infertile or that if fertilized no development of the embryos is likely to occur comparable with the stage reached when the hatching egg is used as a culture medium.]—J. D. BLAXLAND.

BALLANTYNE, E. E. (1944). **Gas gangrene antitoxin production.**—*Canad. J. comp. Med.* **8.** 108–110. **865**

A description of the method employed to prepare antitoxin from the gas gangrene group of organisms, *Cl. welchii*, *Cl. septicum*, and *Cl. oedematiens*. When test bleedings indicate antitoxin levels of 300 units per ml. for *Cl. welchii* and 600 for *Cl. oedematiens* and *Cl. septicum*, blood from each animal is collected in two 4-litre bottles containing sodium citrate. Horses are producers over a period of 18 months. Peak production lasts 6–10 weeks.—L. M. HEATH (CANADA).

HERRINGTON, B. L. (1944). **A note regarding the speeds of Babcock centrifuges.**—*J. Dairy Sci.* **27.** 857–859. [Author's summary copied *verbatim*]. **866**

The table of speeds of Babcock centrifuges in common use gives equal forces at the bottom of the cup, not in the bottle where the sample is placed. A new table has been calculated to produce equal forces at the fat-acid interface during the first centrifuging period. It is recommended that the use of small diameter centrifuges be discontinued because the force acting to remove water emulsified in the fat column is very small in the small machines.

GÖBEL, F. (1943). Die Anwendung der Nasenschlundsonde beim Pferde. [**Use of the stomach tube in horses**].—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 283–285. **867**

A general article on usage and technique; no new knowledge is contributed.—J. E.

STEINBERG, A. (1944). **A new method of preventing blood coagulation.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 124–127. **868**

Coagulation of blood can be prevented by the addition of ion exchange absorbents which remove calcium. A phenol formaldehyde resin with a polyhydric phenol base forms such an absorbent. The resin can be regenerated and used repeatedly. The method causes minimal changes in the cells of the blood.—E. B

*ÅSLANDER, A., & TÖRNQVIST, S. (1943). En metod att in vivo följa forbeningsprocessen hos forsöksdjur. [**A method of following the growth of bones in experimental animals**].—*Svensk VetTidskr.* **48.** 71. [Abst. from abst. in *Norsk VetTidsskr.* **55.** 222]. **869**

The method outlined but not fully described in the abstract consists of X-ray photography through aluminium foil of graded thickness, whereby the degree of ossification can be studied.—J. E.

See also absts. **712** (viability test for coccidian oocysts), **714** (isolation of plasmodial sporozoites), **726** (growth of influenza virus in chick embryos), **730** (disinfection against equine infectious anaemia), **911** (the microscope).

MISCELLANEOUS

—. (1944). **Additional veterinary colleges**—*N. Amer. Vet.* **25.** 322, 324, 326 & 328. **870**

Attention is directed to some difficulties which may handicap all veterinary institutions should the number of schools be allowed to exceed that actually required. Owing to war-time conditions, recommendations to create additional schools in Illinois and elsewhere have been made. A warning is given that the present schools were amply sufficient in peace-time to produce all the graduates required and it is argued that until the need is clearly evident for greater numbers of graduates than were previously required, the creation of new schools should be deferred.—D. D. OGILVIE.

*HABERSANG, O. (1942). Zur Geschichte der tierärztlichen Ausbildungsstatte in Galizien. [**History of veterinary education in Galicia, Poland**].—*Dtsch. Tierärztebl.* **9.** 153–154. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 570]. **871**

H. gives a historical survey of veterinary education

in Poland. After the occupation of Poland, the Germans reopened the veterinary school at Lemburg in April 1940 for the training of 300 Ukrainian students.
—R. A. Roper.

—. (1944). **Dominion Veterinary Medical Council.**—*Canad. J. comp. Med.* **8.** 65. 872

A Dominion Veterinary Medical Council has been formed, which several, but not all, of the Provincial Associations of Canada have endorsed. It is hoped that all will support the Council when they have had an opportunity of discussing its objectives.

The purpose of the Council is to act as a central body in speaking with authority for the Canadian veterinary profession. The lack of such a body has been a barrier in the past, hindering the profession in dealing with matters of national interest.
—Chas. A. Mitchell (Canada).

Polding, J. B. (1944). **The future development of the field veterinary services in India.**—*Curr. Sci.* **13.** 89–93. 873

The reason for the present inadequacy of the Indian veterinary services lies not so much in the paucity of research work or low standard of education as in the disabilities of the field worker, mainly due to transport difficulties. To remedy this inadequacy, P. elaborates a scheme for the mechanization of the field veterinary services for which a splendid opportunity will occur at the end of the present war when veterinary personnel and large numbers of motor vehicles will become available, and new road building schemes will be launched.

With existing means of transport, the field veterinarian often reaches the scene of an outbreak exhausted, with almost no diagnostic equipment, and has to make a guess-work type of diagnosis after which he returns to his headquarters to fetch the necessary equipment. The second visit is frequently too late and this does not encourage the confidence of livestock owners. With mechanized transport the veterinarian can carry very complete equipment for this work, including diagnostic apparatus, such as microscope, stains, slides, agglutination materials, P.M. equipment, simple surgical apparatus, and medicines in common use and can, at short notice, include in his equipment a stock of biological products.—M. Abdussalam (India).

Raust, R. (1943). Essai sur l'organisation d'un service vétérinaire d'Etat pour l'inspection généralisée des denrées alimentaires d'origine animale. **[A State veterinary service for the inspection of foods of animal origin].**—*Bull. Acad. vét. Fr.* **16.** 358–361. 874

Suggestions are given for the complete reorganization of the present system of inspection of foodstuffs of animal origin in France. The country should be divided into territories, each provided with central and local abattoirs. All abattoirs should belong to the State, and the veterinarians in charge should possess certificates in sanitary police measures and in inspection of foodstuffs of animal origin. The veterinary staff could be recruited from the whole country, but subordinate staff should be recruited locally and all should be State servants.—Isobel W. Brocklehurst.

—. (1944). **The veterinary service of China.**—*Vet. Med.* **39.** 232. 875

Veterinary workers in China may be classified as traditionalist and modern. The traditionalists enter veterinary medicine through apprenticeship and number about 5,000. Their knowledge is meagre, but upon them mainly rests the welfare of the vast livestock industry of China. Their efforts are directed chiefly towards horses and cattle; sheep, goats and pigs receive little attention and dogs, cats, and other animals, none. The moderns are few in number and are graduates of Chinese or foreign veterinary colleges. Practically all the graduates of foreign veterinary colleges occupy leading positions as professors, chief inspectors, etc.

The centres of veterinary education in China are the Military Veterinary School [location not given], the Department of Veterinary Medicine of the National Central University, and the Shanghai Veterinary School. The Military Veterinary School was inaugurated in 1904 and its 500 graduates constitute the Army Veterinary Corps and part of the meat-inspection service. The University Veterinary School commenced activities in 1929 and the course comprises a four-year curriculum. Because of political considerations, it has so far produced only about a score of graduates. The Shanghai Veterinary School was opened in 1932 and comprises a two-year course curriculum, concentrating upon meat inspection and the control of epizootics. It produces about 50 graduates each year. It is officially estimated that China requires at least 10,000 more graduates for routine epizootic prevention work alone.

Most of the known animal diseases occur in China. Rabies occurs extensively; swine plague and swine fever are very common; rinderpest is enzootic; anthrax is widespread; fowl cholera periodically sweeps the whole country, and some 60% of the army horses are infected with glanders. The annual monetary loss from enzootics cannot be estimated, but is certainly very large. The loss from poultry diseases alone is estimated at over 50 million dollars.—D. D. Ogilvie.

—. (1944). **Establishment of Registry of Veterinary Pathology at the Army Institute of Pathology, Army Medical Museum, Washington, D.C.**—*J. Amer. vet. med. Ass.* **105.** 105. 876

An arrangement has been made between the Surgeon General of the U.S. Army and the Board of Governors of the American Veterinary Medical Association for the establishment and maintenance of a Registry of Veterinary Pathology. This will become a unit of the American Registry of Pathology, situated at the Army Medical Museum, Washington, D.C. The material and records will be available for study to graduate students, specialists, and other authorized persons.

The material will comprise :– (a) specimens illustrating pathological anatomy, general and special; (b) histological preparations to show the normal histology of the organs and tissues of domestic and wild animals, and (c) specimens illustrating experimentally induced lesions. It is hoped later to prepare sets of histological sections and lantern slides for loan to contributors.

It is hoped that all interested in veterinary and comparative pathology will make use of the Registry and supply it with suitable material, addressed to :– The Director, Army Institute of Pathology, Army Medical Museum (attention: Registry of Veterinary Pathology), 7th and Independence Avenue, S.W., Washington 25, D.C.—E. G. White.

Shook, L. L. (1944). **Training officers, Veterinary Corps, U.S. Army, in meat and dairy inspection.**—*M[ich]. S[t]. C[oll]. Vet.* **4.** 59–61 & 89. 877

A course of instruction was commenced in November, 1940, at the Chicago Quartermaster Depot to train officers of the Veterinary Corps in meat and dairy hygiene inspection. The course occupies about ten weeks and deals with all aspects of the inspection of meat, fish, and dairy products. Instruction is given under the headings of sanitation, quality, specifications, and co-ordination of interpretation of specifications. The sanitation section deals chiefly with changes in

esh meat due to mould, yeast, and bacterial growth. uality inspection is made primarily to protect the .terest of the Government. Specification inspection eals with conformation of foods to Government gulations, with emphasis on canning. The section on o-ordination of interpretation of specifications is ecessary because of the wide divergence in natural haracteristics of many meat and dairy products from ifferent procurement sources.—D. D. OGILVIE.

IENGES, R. W. (1944). **Veterinary Corps in the Mojave Desert.**—*J. Amer. vet. med. Ass.* **104.** 318–321. 878

The work of the Veterinary Corps in the Mojave Desert, California is described. Food-inspection is ess varied than in some military areas, since most of he food is canned, but there are many sanitary problems vhich require attention. These include food truck xamination, supervision of food handling, and examina- ion of water supplies. The veterinary corps is also esponsible for the control of rabies and for the vaccina- ion of all dogs in the area.—D. D. OGILVIE.

HART, G. H. (1944). **Cooperation of the five animal science societies in the war effort [U.S.A.].**—*J. Anim. Sci.* **3.** 91–97. 879

The possibility of forming an American Institute f Biology comparable with the American Institute of Physics is considered. The difficulties of organization re great, since the co-operation of no less than 25 ocieties in biology and agriculture would be necessary. H.'s opinion is that biology has too many ramifications o be successfully co-ordinated in one body. The five ocieties, American Society of Animal Production, merican Dairy Science Association, American Poultry cience Association, American Veterinary Medical ssociation and United States Livestock Sanitary ssociation well represent the field of animal science. hese five societies have an inter-association council rganized for the war effort and this arrangement is an dvance on any of the organizations in other biological roups.—D. D. OGILVIE.

—. (1944). **National Live Stock Loss Prevention Board.** —*N. Amer. Vet.* **25.** 145–147 and 154. 880

The origin is described of the National Livestock oss Prevention Board which was organized in 1934 y interested bodies in order to reduce losses among ivestock from injuries received between the farm and he abattoir. The organization is an extension of a oluntary scheme under which livestock commissioners vere appointed in 1916 by bodies interested in the uestion of reducing losses in the stockyards and in ransit from the farms. Much of the work done has een educational, pamphlets and booklets being issued. 'Safe shipping" certificates are issued to encourage he raising of the standards of motor truck equipment nd personnel.

In addition to these activities, the Board has given ttention to a number of disease problems, such as cattle arbles, nodular worm, avian TB., cattle liver fluke, and o-called "sawdust livers".—J. A. GRIFFITHS.

LIMA, J. P. (1940). A propaganda em pecuária. **[Use of propaganda in the improvement of the livestock industry].**—*Bol. Minist. Agric., Rio de J.* **29.** No. 9. 1–11. 881

This is a general article on methods of propaganda n the improvement of livestock.—MILLER WATSON.

—. (1942). Defesa sanitária animal no Brasil. **[Work of the Animal Health Division, Ministry of Agriculture, Brazil].**—*Bol. Minist. Agric., Rio de J.* **31.** No. 1. 70–72. 882

From the time of its organization to date, the Animal Health Division of the Brazilian Ministry of Agriculture had administered, free, 959,891 doses of vaccine and serum, and had sold 1,264,093 doses of the same products. During the first 11 months of 1940, Brazil exported 208,194,250 kg. of beef and meat products and this was all previously inspected by the Division's inspectors. More than 45,000 animals were exported or imported under control of the Division during the same period.—MILLER WATSON.

FIADEIRO, J. (1942). A acção do médico-veterinário na vida rural. **[Role of the veterinarian in rural life].**—*Rev. Med. vet., Lisboa.* **37.** 77–99. 883

This is a general article on what should be the role of the veterinarian in the rural life of Portugal. F. states that agriculture in Portugal is on a low level, especially with regard to animal production. He gives statistics showing that the consumption of animal products is particularly low in Portugal. If higher yields of crops could be achieved, the livestock could be better fed and improved. The veterinarian should play his part in raising the general standards.—M. W.

—. (1944). **British Society of Animal Production. Report of Inaugural Meeting 6th January, 1944. General topic: Cattle breeding policies.** pp. 38. Edinburgh: The Society. [8vo] [2s.] 884

This report presents a series of three discussions on cattle improvement policy in Great Britain, the breeding of dairy, dual purpose and beef cattle being considered separately; the opening speakers in each section were J. T. EDWARDS, W. S. MANSFIELD and W. A. STEWART respectively.

EDWARDS gave an outline of dairy cattle breeding policies in the U.S.A. and indicated their possible application to British conditions. In the U.S.A. the introduction of artificial insemination had contributed greatly to mass improvement. He stressed the constructive part which pedigree societies could and should assume in any policy of breed improvement.

MANSFIELD described the standards of production required in cattle classed as dual purpose. He emphasized, too, the importance of relating breeding policy to the animals' environment.

STEWART reviewed the history of beef-cattle breeding in Great Britain, and discussed possible sources of beef stores for fattening purposes. He criticized the trend in beef-cattle breeding which has aimed to cater for the export trade and which has led to deficient milking qualities in the cows. He suggested that future breeding policy should be concentrated on the home market, and indicated in this connexion the necessity of a lactation yield of 300–400 gal., so that a beef cow could rear a succession of up to five calves in a season. —N. J. SCORGIE.

—. (1943). **Report of meeting of the Emergency Executive Committee of the National Poultry Improvement Plan in Washington, D.C. June 15-17, 1943.** pp. 4. Washington, D.C.: Bureau of Animal Industry. [4to] [Mimeographed]. 885

The Committee met to consider problems affecting the operation of the National Poultry Improvement Plan during the war. The recommendations made included continued adherence to pullorum testing as a pre-requisite to participation in the breeding stages of the plan and, in the event of rationing being introduced, the giving of priority to breeding-stock owners in the allocation of food.—D. D. OGILVIE.

—. (1943). **Annual Meeting Indiana Veterinary Medical Association, Indianapolis, January 12-14, 1943.** pp. ii+106. [4to] [Mimeographed]. 886

The report of the State Livestock Sanitary Board presented at the Annual Meeting showed that in the

previous year in Indiana, 168,180 cattle had been tuberculin tested, revealing 253 reactors, 39,623 cattle had been tested for brucellosis revealing 3,113 positive and 2,717 doubtful reactors, 239 cases of rabies had occurred in dogs, and 2,028 sheep in 65 flocks had been infected with scab.

Papers read at the meeting dealt with feline distemper, throat infections of dogs and cats, canine leptospirosis, diseases of poultry, shipping fever, nutritional disorders, sterility in cattle, large animal obstetrics, sheep diseases, bovine trichomoniasis, iodine deficiency, and other topics. In throat infections in small animals the use of sulphanilamide or sulphathiazole was advocated. The latter is best for cats which do not tolerate sulphanilamide well. In canine leptospirosis, disappointing results with serum were reported. Intravenous hydrochloric acid (10–20 ml. of 1 : 500 dilution once daily) was claimed to give much more favourable results.

The President of the American Veterinary Medical Association, in conclusion, described phenothiazine as outstandingly the best anthelmintic against stomach worms, nodular worms, and other small round-worms of sheep and considered that if sheep were treated with it regularly and were adequately fed, many other disease problems would disappear. He deplored the present tendency of practitioners to depend largely on vaccines, so often used without any reason which can be given scientific support. He instanced the high death rate in transit cattle which have been vaccinated in an attempt to prevent transit fever ; this condition is often due primarily to a combination of lack of food and stomach-worm infestation. He also deplored the tendency to overemphasize the importance of certain types of laboratory findings and to depend too little on clinical observations, when skill and knowledge of the right order could yield the information required.

—D. D. Ogilvie.

—. (1944). **Great Britain. Draft Rules and Orders, 1944. Therapeutic Substances. Draft, dated February 11, 1944, of the Therapeutic Substances Amendment Regulations, 1944, proposed to be made by the Joint Committee constituted under Section 4 (I) of the Therapeutic Substances Act, 1925 (15 & 16 Geo. 5. c. 60).** pp. 4. London : H.M. Stat. Off. [1d.] **887**

Regulation 12 of the Therapeutic Substances Regulations is altered to exclude vaccine lymph from the general requirements for therapeutic substances. Conditions under which vaccine lymph is now required to be manufactured are set out. The establishment concerned must be under the direction of a competent expert, and the animals housed under satisfactory conditions and observed for at least five days in order to ensure their freedom from disease. Immediately before the vaccinal material is collected, the animal must be killed and a careful P.M. examination made by a qualified person. If any communicable disease is found, the lymph must be discarded. Detailed instructions are set out concerning preparation of the lymph, labelling, containers, and tests for purity and for potency.—D. D. Ogilvie.

—. (1944). **Great Britain. Agriculture (Miscellaneous Provisions) Bill.** pp. 11. Items of veterinary interest pp. 6–7. London : H.M. Stat. Off. [8vo] [3d.] **888**

The bill extends the Improvement of Livestock (Licensing of Bulls) Act, 1931, to pigs, and references in that act to bulls, cows, and cattle-breeding societies can now be taken to refer also to boars, sows, and pig-breeding societies.—D. D. Ogilvie.

—. (1943). **State of North Dakota. Laws and regulations pertaining to livestock sanitary control work.** pp. 78. Bismarck, N. Dak. : Livestock Sanitary Board. **889**

A livestock sanitary board consisting of three persons financially interested in the breeding and maintenance of livestock in North Dakota and of two veterinarians, protects the health of the animals of the state by measures for the prevention, suppression, control, and eradication of contagious and infectious diseases. The board has laid down rules for the killing of diseased stock and disposal of carcasses, and separate procedures have been set up for dealing with TB., glanders, contagious abortion, anthrax, pullorum disease, swine fever, rabies, and mange of cattle and sheep. Regulations have also been made and are detailed concerning the issue of certificates of health for pure-bred cattle, the cleaning of cattle cars, the erection of dipping tanks, the operation of rendering plants, livestock sales rings, the importation and movements of animals, the cooking of swill for pig feeding, the control of virulent biological products, and the fees allowable to veterinarians for work done on behalf of the board.

Specific directions are laid down for the disinfection of premises, for taking blood samples from cattle for the agglutination test for contagious abortion, and for the preparation of materials for transmission for laboratory examination.—D. D. Ogilvie.

—. (1943). Sobre productos para marcación de ganado. Se adoptan disposiciones. **[Uruguay : decree regulating the production of animal brands].** —*Bol. mens. Direcc. Ganad., Montevideo.* **27.** 227–228. **890**

This decree prohibits the importation, manufacture, sale or use of substances or means of branding animals in place of the hot iron unless such substance or method has been inspected and approved by the Ministry of Agriculture.—Miller Watson.

—. (1944). **The advantages and disadvantages of livestock shows. Discussion by the Central Veterinary Society.** [Speakers : DeVine, B., Vesey-Fitzgerald, B., Reed, G. C., Watmough, W., & King, W. S.]— *Vet. Rec.* **56.** 281–283 & 291– 293. **891**

DeVine discussed various aspects of livestock shows. He gave a short historical survey of outbreaks of scheduled contagious diseases in England, and cited instances where shows had contributed to the dissemination of such diseases, *e.g.* following the Royal Agricultural Society Show of 1805, rinderpest spread rapidly throughout England and extended to parts of Scotland and Wales. As a result of the widespread outbreaks of foot and mouth disease in the years 1922, 1923, and 1924 the Ministry of Agriculture issued recommendations to agricultural show societies with a view to limiting the possible spread of the major animal epizootics. More recently, the need for the segregation at shows of tuberculin tested and non-tested cattle has arisen, and this has in some instances caused a good deal of confusion in locating the exhibits. Other disadvantages of livestock shows referred to by the speaker were connected with the transport of the stock to shows and their exhibition under less favourable conditions than those to which the animals were accustomed at home.

Vesey-Fitzgerald and Reed dealt with educative aims of shows in relation to livestock improvement.

Watmough discussed the exhibition of small animals, including poultry and cage-birds, and the need for an increased veterinary interest in such shows.

King described the essential points of conformation as seen in the type of gelding exhibited at recent horse shows.—N. J. Scorgie.

LIKAEV, V. A. (1940). Vliyanie mashinnovo doeniya na sostoyanie molochnoĭ zhelezy korov. [**Influence of milking machines on the udders of cows**].—*Veterinariya, Moscow.* No. 2. pp. 108–116. [French summary]. **892**

Comparative studies were made for three months n three groups of dairy cattle ; one of these was milked y hand and the other two by two different types of ilking machines. No ill-effects were observed on the dder or on milk yield in the machine-milked groups. —A. MOLDAWSKY.

EESE, A. S. (1943). **Second supplement to "A treatise on the one-humped camel".** pp. 3. Guildford, Surrey : The Author. [8vo] [6d.] **893**

This second supplement brings L.'s book up-to-ate in certain essential matters. The book is the best vailable on the subject and should be of immense value o those dealing with camels in the present war.

OUGHTON, I. B., CUNNINGHAM, O. C., HULTZ, F. .S, LEINBACH, F. H., & MILLER, R. F. (1944). **Make them "fighting" sheep.**—*J. Amer. vet. med. Ass.* **104.** 133–135. **894**

This is one of a series of articles designed to timulate more efficient production of meat and wool o meet war needs. The authors discuss the manageent of farm and range flocks of sheep.—G. B. S. H.

ERGENT, ED., & GAYOT, G. (1943). Notes sur la chèvre "rouge" du Sahara du nord-est (chèvre du Mzab ou de Touggourt). [**The "red" goat of the north east Sahara (Mzab and Touggourt, Algeria)**]. —*Arch. Inst. Pasteur Algér.* **21.** 203–213. **895**

The "red" goat of the north-east Sahara is a tatic inhabitant of several of the oases in this region, n contrast to the wandering herds of "black" goats which follow the nomadic peoples of this same region. The latest statistics put the number of "red" goats at 836, of which about 20% are hornless as compared with 7% hornless amongst all other goats in Algeria. A detailed description of the "red" goat is given ; its principal characters indicate that it is related to the Nubian, from which it is most probably derived. Like the latter, the "red" goat is an excellent milker, and the authors state that it is desirable that careful selection of the strain should now be undertaken and, in view of its superior qualities, the hope is expressed that it may eventually supplant the common indigenous strain throughout Algeria.—N. J. SCORGIE.

PARMENTER, D. (1944). **Army's four-footed soldiers.** —*J. Amer. vet. med. Ass.* **104.** 61–62. **896**

Details are given of the training, clothing, and equipment of army dogs. All the dogs are immunized against distemper and are under constant veterinary observation.—J. A. GRIFFITHS.

MATHIS, M. (1942). Technique d'élevage des souris blanches. [**The breeding and maintenance of white mice**].—*Arch. Inst. Pasteur Tunis.* **31.** 336–340. [Reprinted from *Pr. méd.* Jan. 8th–11th. (1941)]. **897**

In most laboratories it has been found difficult to breed white mice, particularly in the tropics, where it has been said to be impossible. Some laboratories, however, have been successful, but the conditions required have not been fully understood. An attempt is now made to set out the main factors involved.

Small groups of mice fare better than large ones, and 25 compartments of 20 cm. sq. taking ten animals are better than one large compartment of comparable size taking 250 animals.

Mice are naturally nocturnal ; an opportunity should be given them to exercise at night, and paper, wood or cloth provided. Food should be given in the evening, and should be varied and contain the requisite vitamins. Pure water should be provided, care with regard to water being especially necessary in the tropics. The optimum temperature is about 25°C., and tropical temperatures are not adverse.

For breeding, about ten females should be allowed to one male, and they should be removed from the breeding cage when they show evidence of pregnancy. In cold climates, several females can be allowed to rear their young in one cage, but in the tropics, to avoid excessive warmth and moisture not more than two should be together.—U. F. RICHARDSON.

THOMAS, A.D., & SNYMAN, P. S. (1943). **Eradicating meercats.**—*J. S. Afr. vet. med. Ass.* **14.** 99–101. **898**

Pilot experiments have been carried out on the eradication of meercats for the purpose of rabies control. So far 32 separate infected areas have been cleared. The veldt is combed systematically in successive trips by a gassing squad walking 20–50 yards apart. The meercats flee to their burrows and are gassed in the burrows which are then closed. The odd ones remaining alive are easily found by the reopening of their burrows ; these are trapped and this trapping is continued until all holes remain closed. The burrows are usually distributed along the gullies and water courses. Watersheds between water courses are almost a no man's land for meercats, and hence the eradication measures, to be effective, must cover the whole of a catchment basin. Periodic reinspection of such cleared areas has shown that even 12 months afterwards, no meercats have re-entered the area, since all the burrows remain closed ; in areas cleared two years before, a few meercats have reappeared and after three years, most colonies are reinhabited. There is reason to think that in at least two areas in the Orange Free State where eradication was undertaken, rabies had occurred as an epizootic and decimated the meercats, since there had been extensive abandonment of the colonies.

—E. M. ROBINSON (S. AFRICA).

—. (1944). **Opportunity for films.**—*Lancet.* **247.** 601. **899**

Although a film of the mammalian heart was made as long ago as 1897 and the first surgical operation was filmed in 1898, the film has scarcely been used as a teaching medium in Britain. The film appeals to the eye and being free from the limitations of space and time, it can equally well enlarge microscopic objects and compress into minutes a process taking hours or days. By means of the film, demonstrations by the best teachers can be made available over the whole country and all of the observers can see clearly at the same time.

It is suggested that for the full potentialities of the medical film to be realised, a central body is required to co-ordinate existing activities and the Films Division of the Ministry of Information, if continued after the war, would be admirably suited to undertake such duties. Failing this it is considered that a body such as the Ministry of Health or the Medical Research Council should form a films section and, to accomplish its task fully, should form a film unit of its own.

—T. E. GIBSON.

—. (1944). **Inventions of veterinarians at work.**—*J. Amer. vet. med. Ass.* **104.** 344–345. **900**

Inventions by veterinarians include the pneumatic tyre by Dunlop, the chemical depilation of pigs by Hardy, the method of reducing and fixing fractures by Stader, and the systematization of commercial poultry carcass inspection by Lynn. A description and several illustrations of Lynn's system are given.—D. D. O.

REPORTS

GOLD COAST. (1944). **Department of Agriculture, Ashanti. Annual Report—1943-44.** pp. 12. Items of veterinary interest pp. 5–9. Kumasi. [fcp] [Typescript]. **901**

Interest in livestock in Ashanti is increasing, and it is thought to be essential that improved breeding stock should be built up for future sale to the public. Particular attention has been devoted to fowls and pigs, but other kinds of poultry and sheep and goats have also been maintained, and observations have been made on the fattening of cattle. As to poultry, the original policy of the department was production, but this has been changed to the improvement of local fowls. Losses were heavy due to tick infestation and FOWL POX, the latter being ascribed to infection from pigeons. The tick infestations were overcome by treatment with kerosene and the use of bamboo houses.

Losses among sheep and goats exceeded half the number of births, and the pigs suffered losses from TRYPANOSOMIASIS. Except for the trypanosomiasis of pigs, combated by screening, little information is available as to the other causes of loss.

Plans are described for tentative measures to develop the livestock industry, and for the encouragement of mixed farming for natives on a co-operative basis.—U. F. RICHARDSON.

GOLD COAST. (1944). **Annual report: 1943-44. Agriculture—Central Province.** pp. 16. Items of veterinary interest Sect. XI. pp. 2. Asuansi. [fcp] [Typescript]. **902**

The livestock section of this report records a heavy loss in pigs from *Trypanosoma simiae* infection, which was only overcome by placing the animals in fly-proof premises. Sheep losses were low, and HELMINTH INFESTATION and FOOT ROT were successfully controlled. Fowls on the Asuansi farm were affected by TUBERCULOSIS, PULLORUM DISEASE, FOWL POX, nasal CATARRH, TUMOURS, and VENT GLEET, and the death rate was high. Rabbit keeping was also a failure, but it is hoped that better results will be obtained with the provision of breeding hutches.—U. F. RICHARDSON.

U.S.A. STATE OF NEW YORK. (1940). **Report of the New York State Veterinary College at Cornell University for the year 1938-1939.** [HAGAN, W. A.] pp. 198. Albany, N.Y.: J. B. Lyon Company. [8vo]. **903**

Only a small proportion of the applicants for enrolment as students can be accepted—40 per year; there were 328 applicants in 1939. The staff numbered 55, including 13 members of faculties of colleges other than that of veterinary medicine and, in addition, 14 extramural veterinarians and others who gave special lectures.

A conference for veterinarians is held in the College annually; the attendance at the 1939 conference was over 300.

The number of animals treated at the College clinics during the year was 1,775 horses, 12,426 cattle, 630 sheep, 1,913 pigs, 3,847 dogs, and 978 cats.

A diagnostic laboratory for practitioners provides a complete service and, during the year, 146,367 blood tests and 2,500 other tests were made there, excluding poultry work. At the laboratory of the Experimental Station 12,475 blood tests and 268 other tests were made in addition to the preparation of 1,446 litres of brucella antigen. Two laboratories for the diagnosis of poultry diseases are maintained and 11,922 examinations were made, in addition to the production of 1,053,582 doses of FOWL-POX vaccine and over 800,000 doses of DUCK CHOLERA vaccine.

Approximately 60 research projects received attention during the year, including work on BRUCELLOSIS, BOVINE MASTITIS, JOHNE'S DISEASE, PARASITIC INFESTATIONS of herbivorous animals and of poultry, TUMOURS of poultry, and nutrition of herbivora. Work on BRUCELLOSIS included observations on calfhood vaccination, but no results were available. Bovine MASTITIS work involved testing the curative value of dye bacteriostatic substances by udder infusion. Promising preliminary results were reported. Work on JOHNE'S DISEASE was aimed chiefly at following the very early stages of the disease in calves and in investigating the "essential substance" for growth of the organism.

Work on poultry parasites was chiefly concerned with COCCIDIOSIS. Six previously recognized and one new species of coccidia were encountered, two of the species having well developed pathogenic properties. Of a wide variety of drugs tested, none was wholly effective; sulphanilamide was promising, but was too toxic for practical use. Attempts to immunize birds both actively and passively failed.

Studies on NEOPLASMS of chickens have been carried out for 5–6 years. Little progress has been made; at least 20% of deaths of hens in New York State are due to tumours.

In physiological research, digestion in ruminants was investigated by the use of the rumen fistula in sheep. Electrocardiographic records of various species of animals were made. Other projects included a study of the carbohydrate metabolism of birds and blood chemistry studies in several metabolic diseases of cattle and sheep.—D. D. OGILVIE.

U.S.A. STATE OF NEW YORK. (1942). **Report of the New York State Veterinary College at Cornell University for the year 1940-41.** [HAGAN, W. A.] pp. 195. Geneva, N.Y.: W. F. Humphrey Press Inc. [8vo] [For report for 1939–40, see *V. B.* **12.** 633]. **904**

In the autumn of 1941, there were 359 applications for enrolment as students. The staff numbered 49, including 12 members of faculties of colleges other than that of veterinary medicine and, in addition, 21 extramural veterinarians and others who gave special lectures.

Over 300 veterinarians attended the annual conference.

The Flower library is part of the college and contains about 15,000 volumes relating to veterinary and human medicine. Current periodicals received totalled 159.

At the College clinics 1,685 horses, 13,425 cattle, 583 sheep, 1,781 pigs, 3,738 dogs, and 851 cats were treated. In the diagnostic laboratories, 209,965 examinations were made. These comprised 188,524 in the general diagnostic laboratory, 12,931 in the Experiment Station laboratory, and 8,510 in the poultry laboratories, most of the tests being blood examinations.

There were about 30 research projects. All had been given attention in previous years. Nutritional studies showed that glucose is absorbed through the ruminal wall—an important point in therapy. In bovine streptococcal MASTITIS, infusion of the udder with neutral acriflavine gave excellent results. In cases treated before marked induration had occurred, about 70% were freed from organisms and symptoms by a single treatment and about 85% by multiple treatments. Dry or nearly dry cows gave the best response, although many were treated satisfactorily during full milk production without serious decrease in the yield.

In an experimental herd, calfhood vaccination against BRUCELLOSIS with strain 19 vaccine conferred a considerable but far from complete immunity when

calves were subjected to continuous exposure after they reached breeding age. Some caution regarding strain 19 vaccine is advocated.

Experimental therapy of COCCIDIOSIS of chickens showed that phenothiazine, lysol, "amphyl" and thiamine chloride are ineffective. Sulphur given with the food had little value as a curative agent, but proved very effective in preventing the spread of infection in flocks. Infections with *Eimeria praecox*, *E. mitis*, *E. maxima*, and *E. hagani* were completely controlled by sulphaguanidine, and the severity of infections with *E. necatrix* and *E. tenella* was greatly reduced. It is stated that sulphaguanidine may replace sulphur for practical use ["sulphamezathine" has since been shown to be superior by TAYLOR & HORTON-SMITH—*V. B.* **13.** 187 & 304].—D. D. OGILVIE.

U.S.A. **The Rockefeller Foundation. International Health Division, annual report 1943.** pp. 170. New York: Rockefeller Foundation. [8vo]. **905**

The continuation of the work on established lines of investigation is described [see also *V. B.* **14.** 145]. There is reference to observations on AUJESZKY'S DISEASE and EQUINE ENCEPHALOMYELITIS. In the INFLUENZA work, previously reported findings were confirmed, namely, that British human and British swine strains, as well as American human strains were antigenically similar, while the antigenicity of the American swine strain was quantitatively different and the American human influenza B virus was entirely distinct. Antisera produced in fowls were found useful and practicable for these antigenic studies. A search was made for new types of experimental animals for influenza research.

Chemotherapy was studied in connexion with several infections and infestations. Work was done on JAUNDICE, experiments being made on pigs and horses. Four of six horses inoculated with icterogenic lots of yellow fever vaccine and two of five horses receiving material from human cases of jaundice following yellow fever vaccination developed increases in icteric index and serum bilirubin 2–4 months after inoculation. The results in the pigs were negative.

The expenditure in 1943 was $1,842,611.

U.S.A. (1944). **The Rockefeller Foundation. A review for 1943.** [FOSDICK, R. B.] pp. 63. New York: The Rockefeller Foundation. [8vo]. **906**

The review gives a popular account of the activities of the Rockefeller Foundation during 1943. A detailed list is given of the appropriations of the Foundation during the year, these totalling $7,760,186. Of comparative interest is the work on penicillin, blood plasma, mosquitoes, and typhus.—T. E. GIBSON.

—. (1942). Fonctionnement des services. **[Work of the Pasteur Institute, Tunis, 1941].**—*Arch. Inst. Pasteur Tunis.* **31.** 352–370. **907**

The work of the Pasteur Institute, Tunis, is under the control of Dr. E. Burnet as Director, and Dr. L. Balozet as Sub-Director in charge of the veterinary service. The report on the work of the institute considers individually the antirabies service, small-pox vaccine preparation, examination of specimens (microscopic, cultural, serological and chemical), control of plague, and the service for the preparation of vaccines, sera, and other biological products. It is stressed in the report that there has been no decrease in the number of persons requiring rabies vaccination since 1929, and that too often legal directions are not carried out, particularly the destruction of stray dogs. Amongst veterinary examinations made, one case of *Babesia equi* infection is recorded, and out of nine dogs, examined by spleen puncture, six were positive for *Leishmania*. Six dogs were positive for rabies out of nine examined. —U. F. RICHARDSON.

See also absts. **882** (Animal Health Division, Brazil), **886** (Indiana Veterinary Medical Association).

BOOK REVIEWS

ANDERSON, A. L. [Associate Professor of Animal Husbandry and Research Associate Professor of Animal Husbandry, Iowa State College]. (1943). **Introductory animal husbandry.** pp. x + 777. New York: The Macmillan Company. [8vo] [$4.00]. **908**

The author indicates in the preface that this book is designed primarily as a text for students at agricultural colleges, its purpose being "to acquaint the student with the fundamental problems and essential general concepts of livestock production in the United States". The book is divided into four parts, each part being devoted to one type of livestock, *viz*, cattle (beef, dairy, and dual purpose), pigs, sheep, and horses and mules. Each part includes chapters or sections dealing with distribution and localization of stock in the U.S.A., types, livestock shows, markets and market classifications, prices, feeding, management and breeding, and slaughtering, processing and by-products. Rather specialized chapters in each part cover the processing and distribution of the animal products or deal with other special considerations such as wool, milk secretion, etc. The chapters dealing with slaughtering and the processing of meats give a particularly useful account of the meat and meat-packing industries in the U.S.A.

The book is comprehensive and includes much factual information relative to animal husbandry and livestock products. The information given in some sections, *e.g.* those dealing with feeding and breeding, is perhaps rather too limited to suit the needs of the specialist reader, but this criticism cannot be regarded as a serious shortcoming in this type of text-book, in which the approach is general rather than restricted to one particular aspect of animal husbandry. To readers outside the U.S.A., the special value of the book consists in its presentation of a wealth of factual information and statistics relative to the whole livestock industry of that country.—N. J. SCORGIE.

NICHOLS, J. E. [M.Sc., Ph.D., F.R.S.E., Deputy Director, Imperial Bureau of Animal Breeding and Genetics, Edinburgh: Formerly Hackett Professor of Agriculture, University of Western Australia]. (1944). **Livestock improvement in relation to heredity and environment.** pp. vii + 208. London & Edinburgh: Oliver & Boyd Ltd. [8vo] [10s. 6d.] **909**

The author states in the preface to this book that his aim is "to outline the principles [of formal genetics] and to indicate how the genetic and environmental concepts are interwoven in the idea of stock improvement". The opening chapters deal with the particular problems involved in the genetic improvement of the domesticated animals, and the author stresses that it is essential to approach this subject on the broadest possible lines, since "in all discussions on livestock improvement it is difficult to lay down hard and fast rules of method or of objective". In the next few chapters, he explains clearly and with the aid of examples taken from the breeding of domestic stock,

the mechanism of inheritance, how variations in character expression follow upon the different ways in which the genes act and interact, and how, in respect to utility characters, the gene effect is usually additive or cumulative. The modern concept of gene and character frequency is expounded by many references to recent work dealing with physiological performance in livestock. The most valuable section of the book is probably that which deals with the environmental aspects of stock improvement. A fresh angle is given to the old problem of distinguishing between the effects of nature and nurture. "The breeder is confronted with two main problems, that of trying to distinguish between the effects of heredity on the one hand and of environment on the other, and that of providing an environment suitable or optimal for the expression of the particular characteristics". As regards the second of these problems, the author emphasizes that the most suitable environment for the selection of animals for utility purposes is that in which they are expected to perform. "An extreme improvement in environment may in effect mean exposure to highly artificial situations such as either the bulk of the population would rarely encounter in practice or would amount to a new environment requiring a different gene complex for a successful fit. The safer general course is to keep the animals as far as possible under those environmental conditions in which they are expected to perform, in which they are to be used, and therein to consider the possible relative significance of the genetic and environmental influences".

In succeeding chapters, the genetic aspects of selection and of breeding systems are dealt with, and provide a scientific explanation of the methods followed more or less empirically by the practical breeder. The difficulties in interpretation of individual performance tests and of the various forms of progeny testing are fully explained and discussed. Particularly noteworthy is the author's approach to this aspect, where he stresses that the effect of the conditions under which the test is applied must always be taken into consideration. The author returns to the environmental aspects in the final chapters of the book, which deal with breed construction and the association of type and environment.

Probably the outstanding contribution of this book lies in what may be called the ecological approach which the author adopts towards livestock improvement. He is concerned to expound the principles of genetics applied to animal breeding on the broadest possible basis. The fact that the individual animal is the end result of a series of complex interactions between its genotype and its environment is never lost sight of. The author's attitude towards the subject may fairly be summarized by the concluding sentence of the book —"Whatever its direction, the policy of improvement should be re-examined in relation to the general pattern of the environment, and the appropriate mating systems and selection methods chosen according to what is known of their effects, of which an account has been attempted here". We would mention only one point of minor criticism which may occur to veterinary readers, *viz*, that insufficient attention has been directed to the possible effect of disease on performance and production, *e.g.* that of mastitis on milk yield.

The book is provided with an adequate index and bibliography. The publishers are to be complemented for the excellence of their production at such a modest price under present conditions.—N. J. SCORGIE.

ZIEGLER, P. T. [Professor of Animal Husbandry, Pennsylvania State College, State College, Pa.] (1943). **The meat we eat.** pp. 376. Danville, Ill.: The Interstate Printers & Publishers. [8vo] [$2.70]. **910**

This book contains detailed information covering the whole field of "butchering" from methods of slaughtering to the preparation of meat for the retail trade; it also contains much information relating to the nutritive values and vitamin contents of the various meat products and gives details of the *per capita* consumption of each kind of meat in the U.S.A. and certain other countries.

As the author states, "clarity may have been sacrificed somewhat for brevity" and this may be more perceptible to the British reader than to the American public for whom it was primarily intended.

The suggestion that farm-killed bacon pigs may be skinned instead of scalded (where this is not practicable) is an interesting observation, particularly as it is stated that the skinned meat not only takes the cure more rapidly but keeps as well as bacon cured in the normal way. This method might be adopted with advantage by the rural home-curer in the United Kingdom.

The book is well illustrated with photographic reproductions; some of these are unlikely to be of great value to a reader inexperienced in meat technology. Some excellent diagrams, however, are given, which are of value to the general reader.

A few errors occur. In the photographic illustration on p. 71, the caption "A—The drooped lung", should read "A—Dropping the bung". The latest reported record yield is given as 76¾% on p. 52 whereas on p. 54 it is stated that the fat steer which was kept short of food for six days dressed out at 78·6%.

It is stated on p. 52 that prime cattle should dress out at from 62–67%. These figures are certainly high as compared with those of prime English cattle; normally any beast dressing above 60% would be considered too fat for the average demand in Great Britain.

—H. E. BYWATER.

MUÑOZ, F. J. [Technical Microscope Consultant], & CHARIPPER, H. A. [Professor of Biology, New York University]. (1943). **The microscope and its use.** pp. xii + 334. Brooklyn, N.Y.: Chemical Publishing Co., Inc. [8vo] [$2.50]. **911**

Many students of biology complete their courses of instruction without any systematic instruction in the use, construction, and optical principles of microscopes. The care of the instrument receives scant attention apart from hints given as the occasion demands. It is regrettable that trial and error methods are often the only sources from which knowledge is gained. Several excellent text-books are already available, *e.g.* DALLINGER'S revision of CARPENTER'S "The Microscope and its Revelation", but they are either bulky volumes dealing for the most part with the aspect of the "revelations", or with smaller ranges of instruments. The title of the present work does not quite do justice to its scope, as is evident from the table of contents. A consideration of the microtome and the technique associated with its correct use occupies 38 pages, a valuable chapter of 37 pages on "Accessories for the Microscope" deals with such topics as the micrometer, counting chamber, camera lucida, photomicrographic camera, proper magnification for measurements, etc. The book is generously illustrated, well produced, and convenient to handle. It can be recommended with confidence to all who aspire to a sound knowledge of this subject.

—C. HORTON SMITH.

See also abst. **802** (artificial insemination of Australian merino sheep).

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